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COAL DEPOSITS OF THE ISLAND OF BATAN, PROVINCE OF ALBAY, SE. LUZON, P. I.

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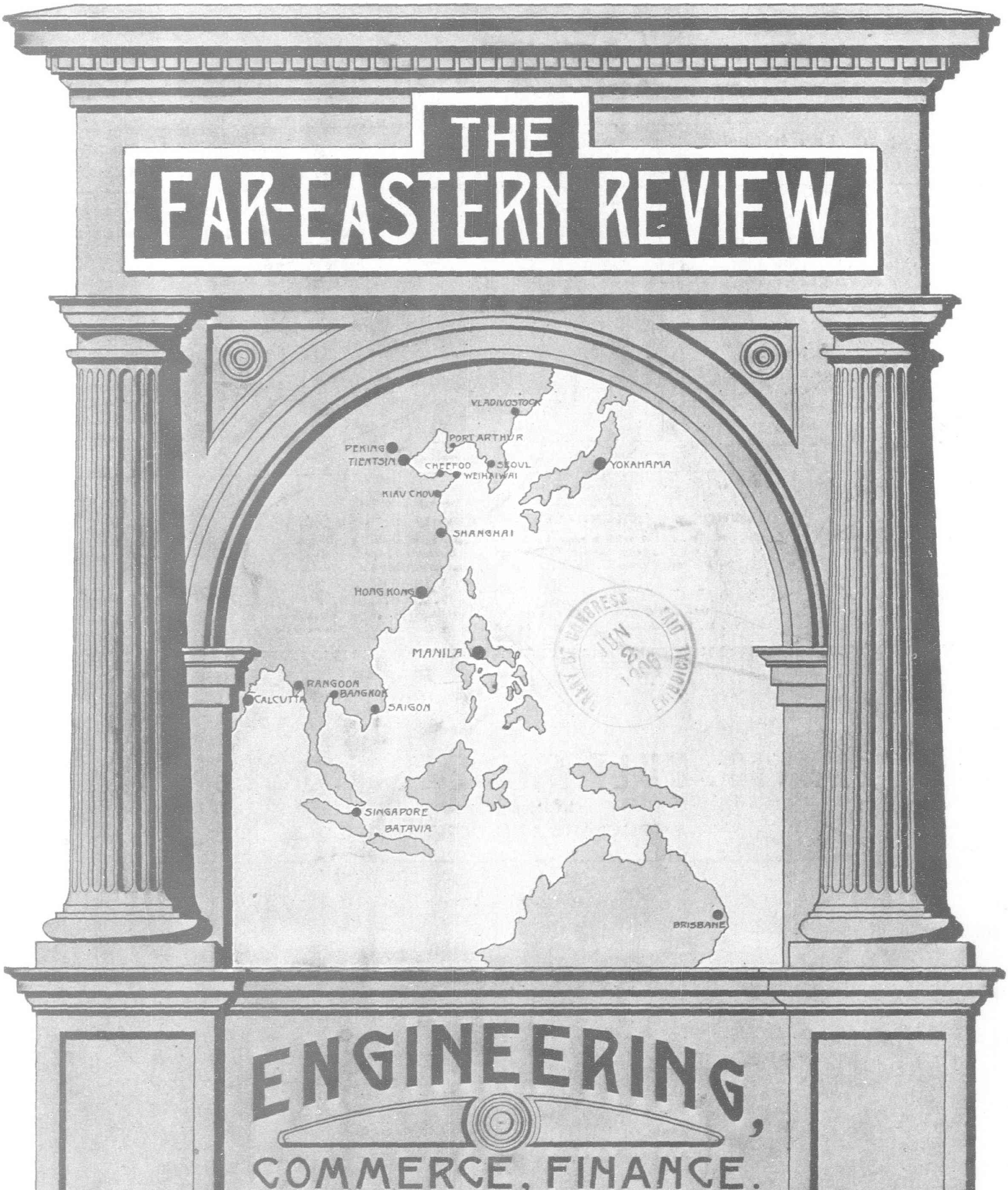

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ENGINEERING, COMMERCE, FINANCE.

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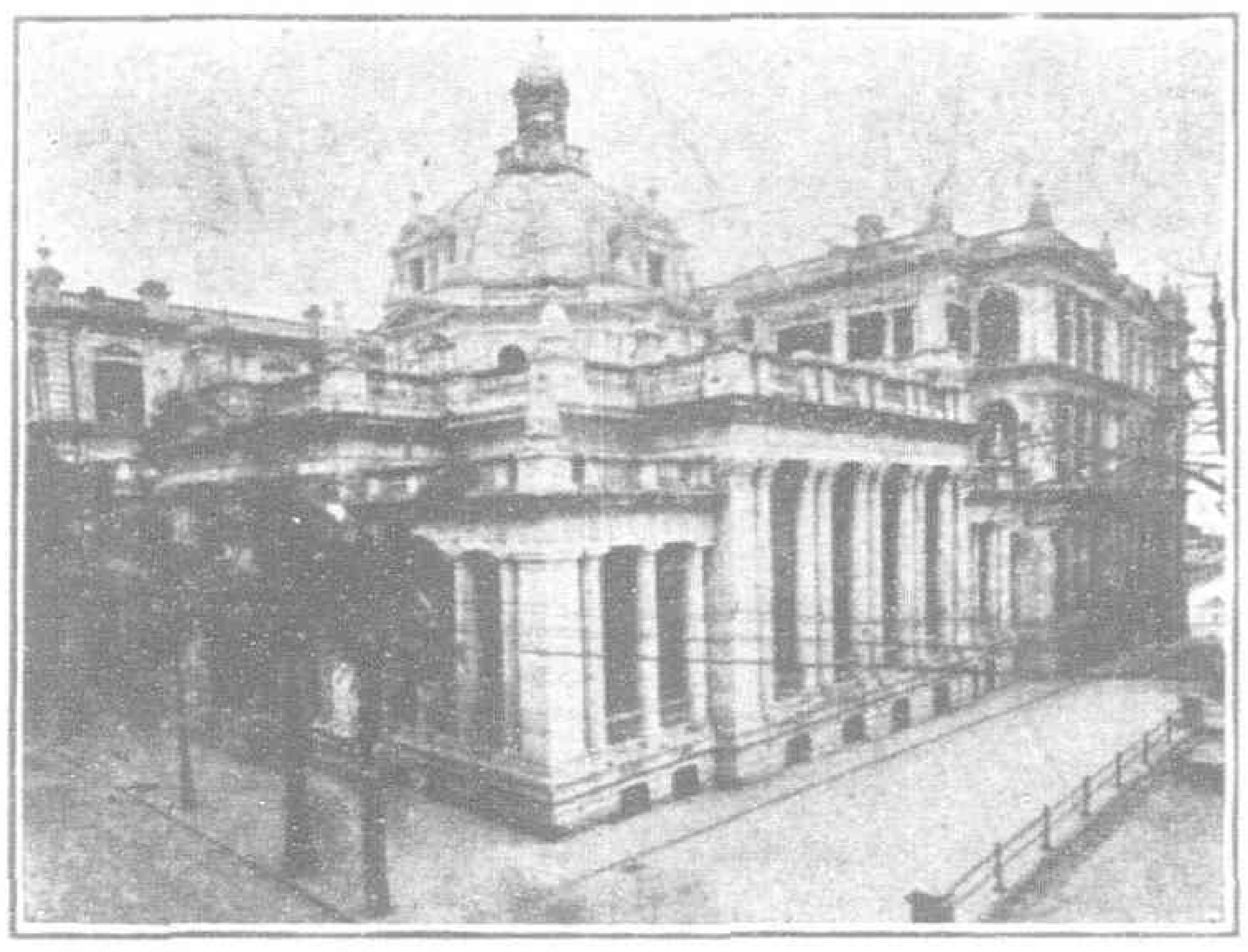

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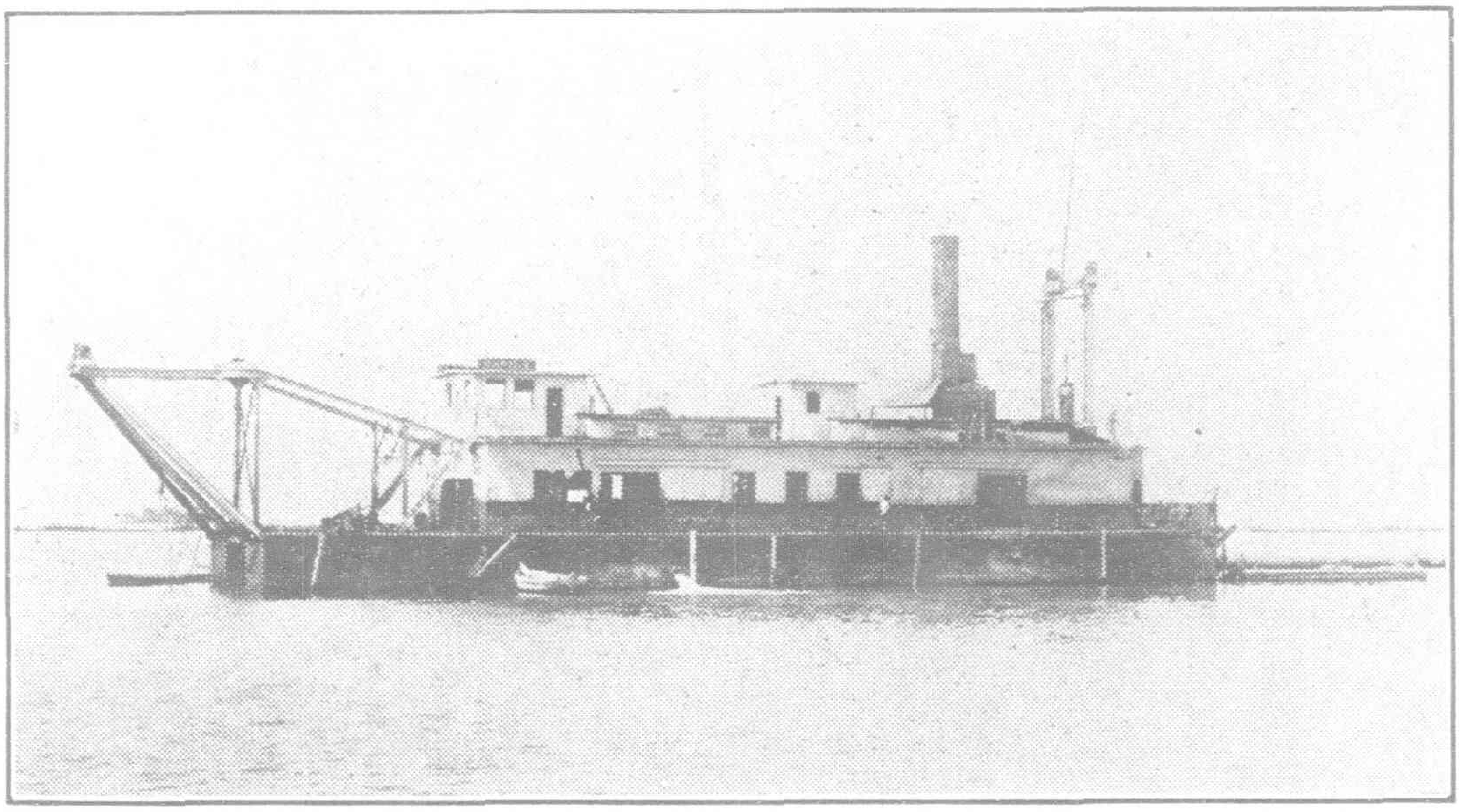

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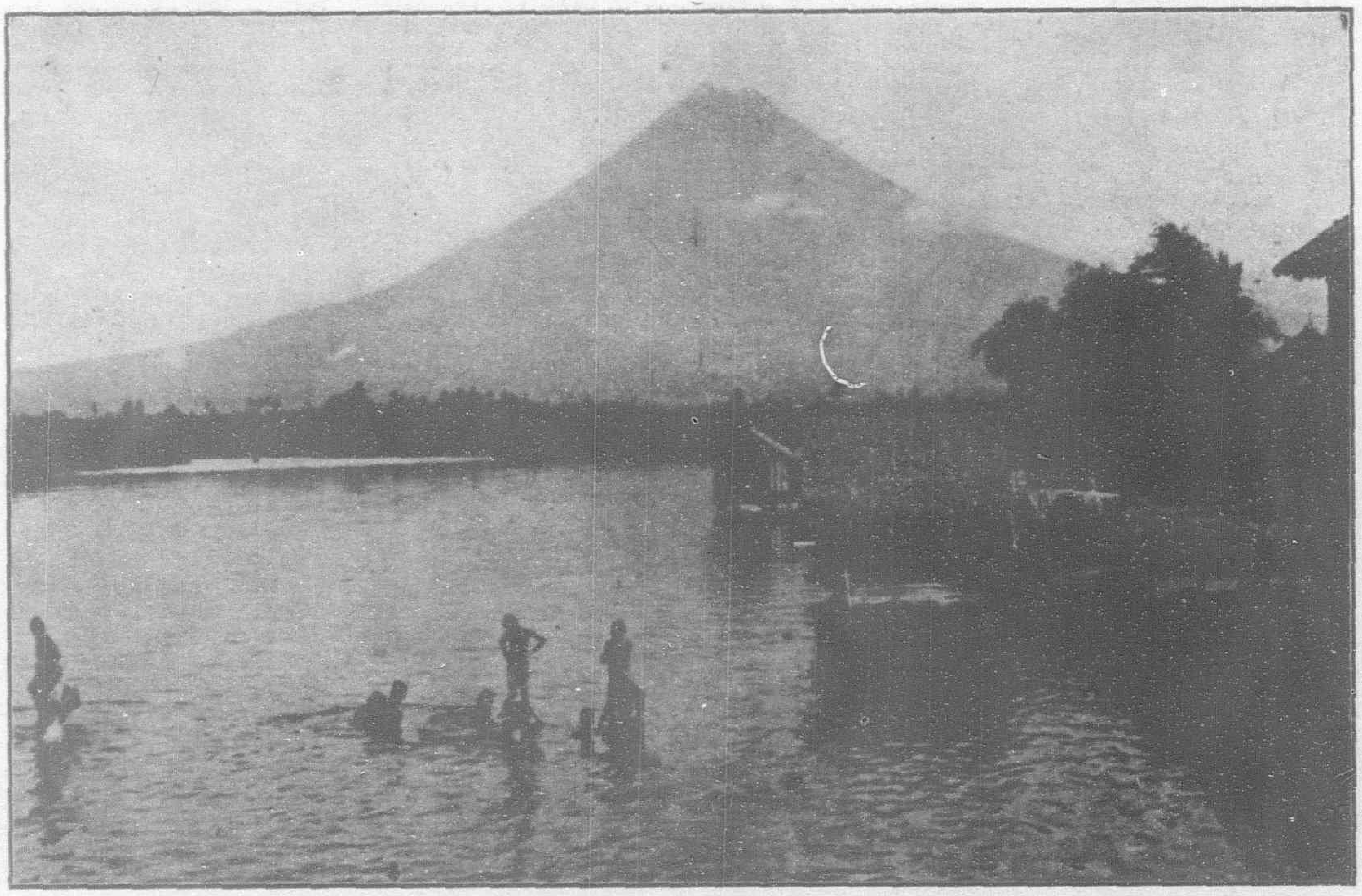
THE FAR EASTERN REVIEW
COMMERCE ❁ ENGINEERING ❁ FINANCE

VOL. II. MANILA, P. I., SHANGHAI, AND YOKOHAMA, APRIL, 1906. No. II.

COAL DEPOSITS OF THE ISLAND OF BATAN, PROVINCE OF ALBAY, SE. LUZON, P. I

There has just been issued by Mr. H. D. McCaskey, head of the Mining Division of the Bureau of Science, Manila, an exhaustive report on the coal deposits of Batan Island, with notes on the general and economic geology of the adjacent region. The bulletin was prepared by Mr. Warren D. Smith, B. S., M. A., a geologist in the government service, and is regarded as a most important exposition of the subject in view of the fact that the federal government at Washington, with authority of congress, is negotiating for the purchase of that section of the island in which the deposits are located. In this purchase will be included all that land owned by private parties in which the most promising claims are located, together with a large tract surrounding them. The intention of the government is to declare these lands a military reservation and either develop the coal deposits on its own hook or permit the work to be done with private capital, if persons can be induced to take of the industry. The government hopes to be able to supply all vessels of the navy in these waters as well as the steamers in the insular service with coal from these fields, and the military as well; besides furnish the merchant marine with fuel.



MAYON VOLCANO FROM LEGASPI, PROVINCE OF ALBAY, P. I.

GEOLOGY.—The Island of Batan lies slightly NE. of Legaspi about 12 ms. and is bounded on the W. by Cacraray Island, on the E. by Rapurapu Island, is due E. of Mayon Volcano, is bisected by the 124th meridian, and lies 13° 10′ and 13° 20′ N. latitude. Its area is about 45 sq. ms. The island is coral grit, but there are breaks in the reef so that ocean-going vessels can come close in, as at Cold Harbor, between Cacraray and Batan, within 100 yds. of shore. Launches drawing 6 to 10′ can pass around three-fourths of the island. The best harbor facilities at Batan, and, for that matter, anywhere along the E. coast of Luzon for 100 ms. are those at Liguan on the W. end of the island. Here an anchorage perfectly sheltered from any heavy winds can be obtained in 17 fathoms with a mud bottom, and this within the limit to which it would be feasible to erect a dock. The average tide amounts to about 3′, but gets as high as 7′ to 8′ in the spring and at the time of full moon.

VEGETATION.—At first sight Batan Island seems to be vegetation and nothing else, and when one sets out to trace outcrops he is not quickly disillusioned. From the shore or the sea scarcely an outcrop can be seen, so thick is the undergrowth. The principal trees are red narra, some of which reach a height of 150′; molave, doa, and bejuco on the higher ground; in swampy estuaries bacauan and bacagua. On the E. ridge, from Calanaga Bay to East Point, which is underlain by volcanic rock, a few scattered jack pines—tapulao—are to be seen. With the exception of this ridge the undergrowth is exceptionally thick, requiring the continued employment of bolomen. The red narra affords all the material for mine timbering and buildings that will ever be required.

HYDROGRAPHY.—Very little can be said in favor of the water supply of the island. There is no running water to speak of in any stream of the island. As a result of his exploratory work, Lieutenant H. L. Wigmore, Corps of Engineers, U. S. Army, estimates that by means of properly constructed reservoirs and weirs about 120,000 galls. of water could be supplied from the various streams per day. For drilling purposes he has had to pump, or haul by carabaos, water from sea level. This constituted one of the chief items of expense in the work carried on by Lieutenant Wigmore. The small size of the island and comparatively low elevation mean lack of large feeding areas for streams; this, coupled with the broken and porous nature of the lime stone formations, militates against the collection into any one large watercourse of a great quantity of water. This will be one of the drawbacks to exploratory work with diamond drills in this area.

TOPOGRAPHY AND PHYSIOGRAPHY.—Topographically Batan Island is quite rugged and broken, and for its size appears to be very mountainous, though none of the elevations rise more than 1,400′. As a whole the island is practically a monocline, with alternating hard and soft strata, and the effect on the streams is to produce monoclinal shifting to the N. The effect produced by

(Continued on page 304.)

THE FAR EASTERN REVIEW

GEO. BRONSON REA, M. E.
PUBLISHER AND EDITOR

COMMERCE :-: ENGINEERING :-: FINANCE

A MONTHLY REVIEW OF FAR EASTERN TRADE, FINANCE, AND ENGINEERING. DEDICATED TO THE INDUSTRIAL DEVELOPMENT AND ADVANCEMENT OF TRADE IN THE PHILIPPINES AND FAR EASTERN COUNTRIES.

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MANILA, SHANGHAI, AND YOKOHAMA, APRIL 1906

INDUSTRIAL DEVELOPMENT OF THE PHILIPPINES

In his inaugural address, Governor-General Henry C. Ide referred to the tariff and spoke of the important part railways are destined to take in the future commercial and industrial development of the Philippines. His remarks on these subjects were to the point and should be of absorbing interest to every person who is interested in the Islands. They follow:

The Dingley Tariff.—The ability, however, faithfully to perform the entire duty of the American people towards the Philippine Islands does not rest wholly with any administration, either here or in the United States, but is in considerable part dependent upon the action of Congress One of the present great needs of the Islands is a better market for its products, and that better market we seek by lowering or breaking down the tariff barriers that exist between the home country and the Islands. Whether in this respect we succeed now or not, such success is only a question of time We have not merely the mighty influence of the president and the secretary of war strenuously striving in that behalf, but we have back of us the hearts of the American people The house of representatives, fresh from the people and responsible to them, has passed the modified tariff law in accordance with the interests of the Filipino people, by the tremendous vote of 257 to 71. This shows how the heart of the American people beats. With the president and his whole cabinet, the American people, the house of representatives, and justice on our side, the right will prevail; if not to-day, then to-morrow, and that to-morrow is not far away.

Transportation.—Intimately connected with subject of the tariff, as affecting our industrial development, lies the question of better transportation facilities within the Islands themselves. It is of little avail, aside from supplying immediate wants, that cultivators have soil capable of producing large crops of valuable commodities if the whole value of such products is to be consumed in transporting them to any market, local or foreign. Such always has been the condition in some of the most fruitful portions of these beautiful Islands Local capital is not available for the construction of railroads. Aside from the poverty of the great mass of the Filipino people, they have been subjected to the fearful disasters of pestilence that has destroyed many lives; contagious diseases that have swept away a large percentage of their beasts of burden; attacks of voracious insects that have devoured their crops; disastrous storms that have prostrated their fruit-trees and dwellings; internal dissensions, war, and predatory bands that have destroyed millions of dollars of valuable property and caused the death of many who ought to have been useful citizens and producers. Under such circumstances the need of capital from abroad is tremendous. Foreign capital has hesitated to enter the Islands because of uncertainty as to conditions here and *because of the highly profitable use to which it* could be devoted in the United States and other parts of the world, yet marked progress has already been made The City of Manila now has a complete system of 40 ms or more of well-equipped street railway, which increase the values of all suburban property and diminishes the expense of living for multitudes of people. Contracts have already been entered into for the construction of 255 ms of railroads in the islands of Cebu, Negros and Panay, under a guarantee by the government of interest at a rate not exceeding 4 per cent for a limited time upon the bonds to be issued, the proceeds of which are to be devoted exclusively to the construction and equipment of the railroads, and the moneys advanced by the government in pursuance of its guarantee to be ultimately returned to it, the amount thereof to be a lien upon the property of the roads These contracts will do much to develop the Visayan Islands, and it is confidently believed that they will soon demonstrate their profitableness so that the parties who have taken these contracts, or others, will cover the Visayan Islands with railroads wherever such enterprises are needed. Negotiations also, are well under way, and which it is hoped will be consummated in the near future, whereby the great Island of Luzon may have its resources opened up and its transportation facilities enormously increased without imposing any unreasonable burdens upon the people. Franchises for such enterprises should be carefully guarded so that no undue burdens may rest upon the people, and so that they may be properly controlled and prevented from becoming the masters instead of the servants of the people; yet every privilege should be granted that is consistent with security to the public and protection of its rights, both for the present and for the distant future. If we fail to get immediately all the railroads that we had hoped for, yet it is to be remembered that a railroad develops a country and opens up beyond its terminus lands hitherto unavailable and tempts settlers to occupy them. Self-interest will induce the owners of railroads to push on and still on into additional territory until all needed facilities are provided. The increased agricultural development that has followed the extension of the Manila & Dagupan Railway to Cabanatuan, in the Province of Nueva Ecija, has shown almost instantaneously what we may expect in other parts of the Islands. Added railways mean added land under cultivation, added value to land near the railroads, added productions for domestic consumption and for export, added demand for labor, added prosperity for the whole country.

The foregoing extracts are the pith of the problem which confronts the economic government of the Philippine Islands, and upon which depends our future. The governor-general had much more of interest to say in his address, particularly with reference to prospective legislation, but we think none of his remarks were so important to the country-at-large as those which we have quoted.

And the governor-general knows whereof he speaks. His long official residence in the Islands has afforded him a splendid opportunity to observe and study conditions throughout the archipelago. The conclusions he has reached are practical, the natural result of a thoroughly-considered problem. Therefore, we know of no man in public or private life who is better qualified to discuss the needs of the country and recommend remedies for the betterment of conditions than the new chief executive.

Judge Ide knows absolutely what this country needs to insure its development and prosperity. It is favorable tariff laws, transportation facilities, and peace and harmony among the people. He pins his faith in the ultimate success of American endeavor out here to the *fair play* of the people at home in the matter of the tariff, and the importation of foreign capital to help the Filipinos develop the latent resources of the Islands. To prove the good intentions of the American people towards these unique Oriental people he cites with becoming pride and enthusiasm the tremendous vote in the lower house of congress in favor of tariff reduction. But there the governor-general must branch off into generalities, because he can not find in the makeup of the senate the same honest representation of the people that characterizes the house of representatives. We regret the presence of this stumbling-block to our olden-day delusion about the senate, because until maturer years and experience taught us otherwise we always believed the senate of the United States to be the most sedate, conservative, fair-minded, liberty-loving, and incorruptible legislative body in the world. Of late, however, we have been forced to regard the senators (or most of them, at least) as our natural enemies.

The governor-general also finds, in spite of the apparent inclination of certain legislators to keep us down, abundant satisfaction in the new era of railway building in the Islands. He shows us that with railways we can accomplish wonders for the country, and in this we are congratulated. The railways will give us transportation facilities so much needed at the present, and with this transportation we will be able to bring to market our agricultural, forestry, and mineral wealth; there will be an impetus to industry of all kinds, and in the near future following their installation the provinces will recover from their present impoverished condition.

With Governor-General Ide at the head of the government we may look for a very popular administration, the underlying principles of which will be progress, industrial development, and prosperity. Our only regret is that Judge Ide's tenure of office promises to be all too short. We should like to have him remain with us long enough to see with his own eyes the beneficial results that are to come in time from the able administration he surely will give us.

We extend to the new governor-general our felicitations.

MINING OF THE ISLAND OF JAVA

Not many months ago some valuable copper discoveries were made in the previously unexplored region of Middle Java, and they caused great excitement at Sourabaya, which is rapidly becoming the chief commercial center of the island. It has not yet entirely subsided. The whole country has been taken up in the form of concession, mostly to Sourabayan companies. The copper deposits occur in big lodes—oxides, copper glance, red oxide, malachite, arywrite and sulphide ores. Mines are being opened up and developed as fast as one could reasonably expect. Miners on the ground believe there is a bright future in store for the copper mines of this section.

There has never been any labor troubles in Java. Laborers are paid at a cheap rate. They are contented with their pay and the conditions of their employment. They are frugal in their habits and are splendid workers. Thousands of natives can be had at a daily wage of 10c gold a day per head, and they have a week's holiday once a year for the purpose of celebrating their New Year.

The mining laws of Java are easy of fulfillment, and no obstacles are thrown in the way of developing the mineral resources of the island. The miner does not get a concession right away. He gets a *vergooning* for a year. Upon it he does a little work,

HIS EXCELLENCY HENRY C. IDE,
SECOND AMERICAN GOVERNOR GENERAL OF THE PHILIPPINE ISLANDS

He then makes application to the government resident for an extension of time. If that official is satisfied with the work that has been done, no matter how little, he will grant the miner the *vergooning* for a further term of 2 yrs. The miner thus gets the area practically free for a term of 3 yrs.—all that it costs him is a guilder, equal to about 40c of American money. That covers the cost of the stamp to affix the necessary document for the making of the application. At the end of 3 yrs. he selects from the *vergooning* the area of ground he requires, and makes the requisite application. He then gets the concession for a period of 75 yrs. for which he has to pay a yearly rental of 2½c gold per acre. The government also receives a small royalty on the output. The Dutch authorities do not retard the influx of foreign capital for the development of the mineral resources of the island. They do not desire the exclusion of foreign capital. It is, on the other hand, gladly welcomed.

The cost of road transportation of material in parts not traversed by railways is very moderate. The small bullock drays (two oxen in the shaft) carries 1-ton weight at the price of $2.40 gold for a distance of 30 ms. The drivers live in their carts. Most of the traveling is done by night.

There is a rainfall of about 20′—not inches—in Java. There is a dry season of 5 or 6 mos., and tropical rains fall regularly every day—but not continuously—for the balance of the year.

Miners who have cast their lot in Java are doing remarkably well and the output of their claims is slowly but steadily increasing.

TRADE OF SIAM

The imports of Siam in 1904, the last year for which reliable figures have been furnished, amounted to Tcs. 101,386,456 (tical=28 cents) according to the U. S. consular report. Of these Bangkok passed over 78,000,000 including Tcs. 11,500,000 worth of metal for coins. Singapore leads with Tcs. 25,000,000 or 30 per cent of the total imports, followed by Hongkong with nearly Tcs. 19,000,000, or 24 per cent. Of Singapore's shipment to Siam, England is down for fully ⅗ and Germany for ⅕. Great Britain and Ireland follow Singapore and Hongkong with Tcs. 15,347,000, or 19.6 per cent of the total.

The imports consist largely of drugs, chemicals, cotton goods, glass and fine glassware, crystal, hardware, hats, caps, gold and silverware, iron and steel goods, machines, and alcoholic beverages. However small and humble the hermit kingdom may be considered, it is still a part of the Asiatic people whose advent among the world's markets is of propitious augury. The land is rich in some things. It is sure to want a great many western produces. These can be made as well and cheaply in the United States as anywhere. An effort ought to be made to secure as much of the Siamese market as possible. The list of its imports is large, and includes all kinds of machine-made articles from pins and needles up to locomotive engines, steel bridges, and rails.

The record of recent years shows a gain in Siam's mercantile marine. Whereas in 1902 only 34 Siamese ships entered Bangkok, 4.71 per cent of the total, in 1903, 49 or 7.99 per cent, and 1904, 72 ships, or 9.97 per cent, entered. The tonnage of these Siamese ships increased from 11,392 tons in 1902 to 28,325 tons in 1904. Their part in the imports rose from 1.48 per cent in 1902 to 11.01 per cent in 1904, and in exports from 0.58 to 3.4 per cent. These are significant figures. They indicate a healthy, constant growth. The rate of increase, if not remarkable, is certainly satisfactory to the Siamese. The Germans and English, long accustomed to look upon the Orient as unprogressive and conservative, are looking with some alarm at Siam's, China's and Japan's efforts to emancipate themselves from the W.

PHILIPPINE PROGRESS LEAGUE

The Philippine Chamber of Commerce, composed of all the prominent native commercial and industrial concerns of Manila, is, at the present time, with the individual and joint coöperation of the other boards of trade, organizing an association for the exploitation of the trade, and manufacturing and agricultural advantages of the Islands. Under the name of the Philippine Progress League these gentlemen propose to carry on a systematic and far-reaching scheme, in the form of wide spread advertising and correspondence, that will give to the world facts about the Philippines, which they confidently expect will bring foreign capital to these shores. An address delivered recently to the chamber by Mr. Hamilton Wright, of California, a visiting newspaper correspondent and promoter, gave an impetus to the great movement which is now shaping itself. The Filipinos are enthusiastic over the proposition, and the members of the Manila and American chambers of commerce are giving them every assistance in their power to develop the league into an energetic and powerful organization.

We are highly pleased with this progressive spirit in the Filipinos, and in our small way will do everything in our power to assist the movement. THE FAR EASTERN REVIEW places at the disposal of the native board of trade its columns for whatever legitimate purpose it may wish to utilize them, and in addition this paper will take great pleasure in lending whatever influence it may wield for the promotion of the league's work.

What the Philippines need more than any one thing just at present is capital. To induce foreign capital to come into any country, the inducements that can be offered must be widely advertised. This is the first purpose of the league. Heretofore the Philippines have been almost entirely overlooked by the big transportation companies whose vessels come to these shores and adjacent ports from other parts of the world. These companies must be induced to give the Philippines the advertising that their traffic with the Islands warrants. This can be accomplished easily enough by the league. All that is needed to bring them into line is the coöperative influence of the commercial bodies of Manila.

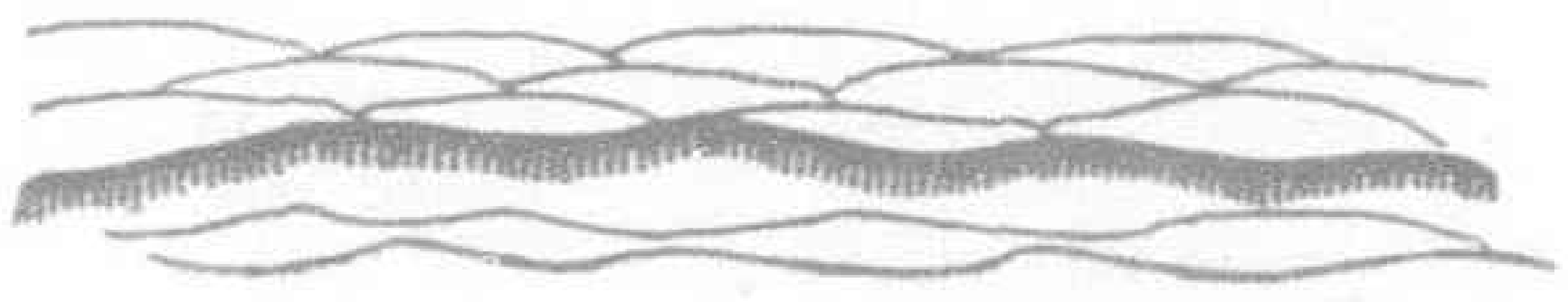
There are innumerable other advertising plans that may be adopted by the league to give the Philippines the prominence in the world that their Oriental location demands for them. Mr. Wright told the Filipinos all about these plans and how to carry them out, and it is most gratifying to see that they are heartily in accord with his suggestions. Money will be needed to carry on the work, but we understand that large funds are to be had for the asking.

And right here it might be suggested that the success of the league's organization will depend primarily upon the class of advertising that it will do. The information given out must be first hand and reliable, without any display of the obnoxious *boom* tactics that have done so much to destroy confidence in many worthy development projects in the homeland. The day of *booms* is practically a thing of the past at home, and such methods should never for a moment be tolerated here. The league must have a conservative and experienced promoter as the active manager of its affairs. To him should be delegated the power to devise a reliable propaganda that will command the interest of capitalists. Such a man will cost money, but he is absolutely necessary to fulfill the purposes for which the league has been organized. The Philippines must be advertised in the papers of all countries, in the steamship and railway offices, and in the steamships and railway trains themselves. Hotel and all other popular channels of advertising must receive careful attention, together with every other public medium through which progress league work is made successful. Let us hope that the work now being born under such favorable and enthusiastic auspices will in time bear abundant fruit.

COAL DEPOSITS OF THE ISLAND OF BATAN, PROVINCE OF ALBAY, SE. LUZON, P. I.

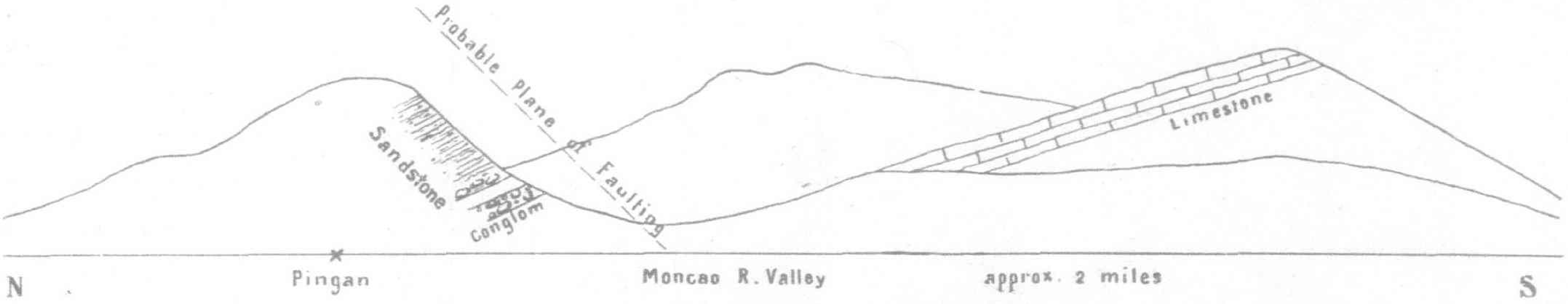
(Continued from page 301.)

the different character of the beds is very marked as one goes up the main street of the island, the Caracaran, for during the first ½-m. or so the bed is in limestone and gorges are frequent; on the other hand, when the friable shale and sandstones are reached the stream flows in a wide, shallow bottom and meanders are the rule. Ordinarily a stream meanders only in its lower course, but here the upper course has reached a graded condition first. Another feature which rightly comes under this heading is the presence of numerous sinkholes in the limestone, particularly in the lower beds. These are from 50 to 100′ in diameter, usually circular, and 25 to 30′ deep. It is calculated that 9,228,240 lbs. of lime and 16,479,000 of $CaCO_3$ have been removed to leave a sinkhole 75′ in diameter and 25′ deep.



CROSS SECTION OF TRAVERTINE DEPOSIT

Deposits of calcareous tufa or travertine were invariably found incrusting shale formations and proved invaluable guides to the underlying formation when all other outcrops were concealed by soil and undergrowth. These deposits obtain thicknesses amounting to 2 and 3′, completely concealing the underlying rock.

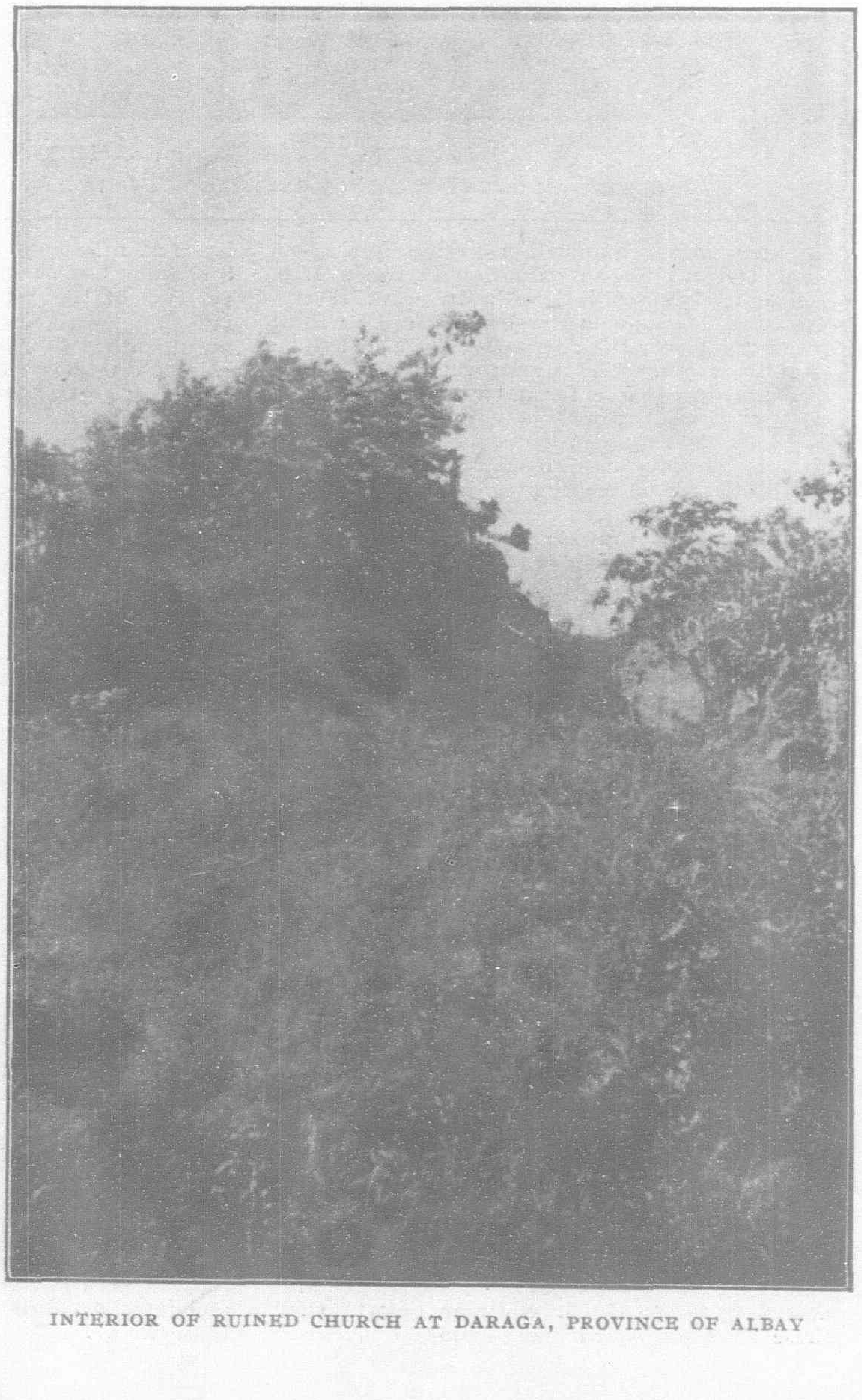


DIAGRAMMIC SECTION NORTH AND SOUTH-WEST END OF BATAN

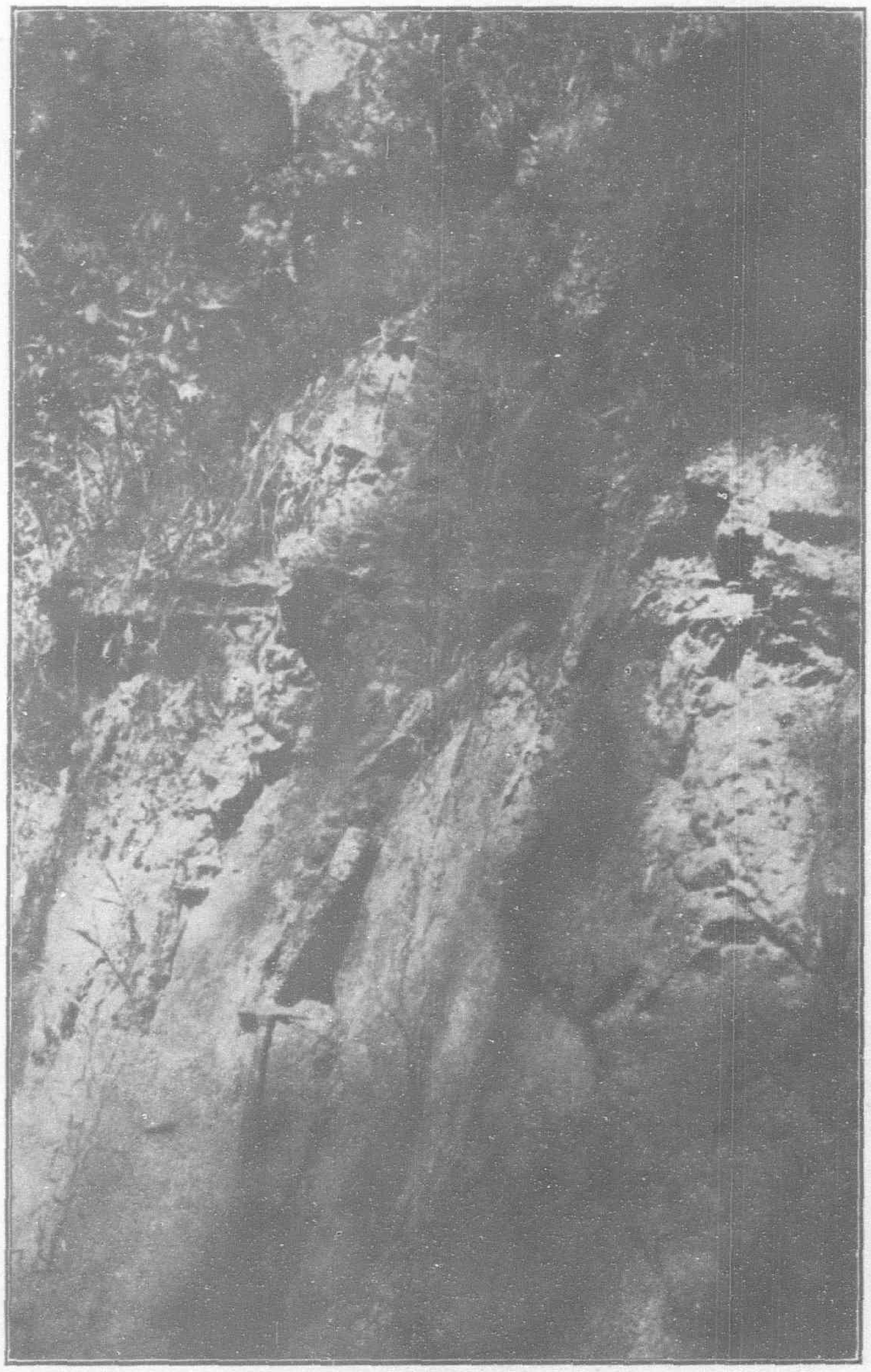
STRUCTURE.—As one walks along the shore at low tide where good sections may be had of the strata, minute faulting from a few inches to 1 or 2′ may be seen, but faulting to a greater degree has not been seen by Mr. Smith either on Cacraray or Batan. Examination of the drill records and the topography in many localities, however, strongly suggest faulting of even a greater degree. Preceding the American occupation some mining work was done on the old Urgera claim, but the work was abandoned for the reason that the coal seams ended in a fault. The direction of this fault is 10° S. with a hade of 10° S. The tunnel was never extended further, so it is not known how extensively broken up this seam is.

Coal is known to exist in Sorsogon Province, near Guijalo, and also near Laguna de

GEOLOGIST'S HEADQUARTERS. FOREGROUND IS DEAD PORTION OF CORAL REEF



INTERIOR OF RUINED CHURCH AT DARAGA, PROVINCE OF ALBAY



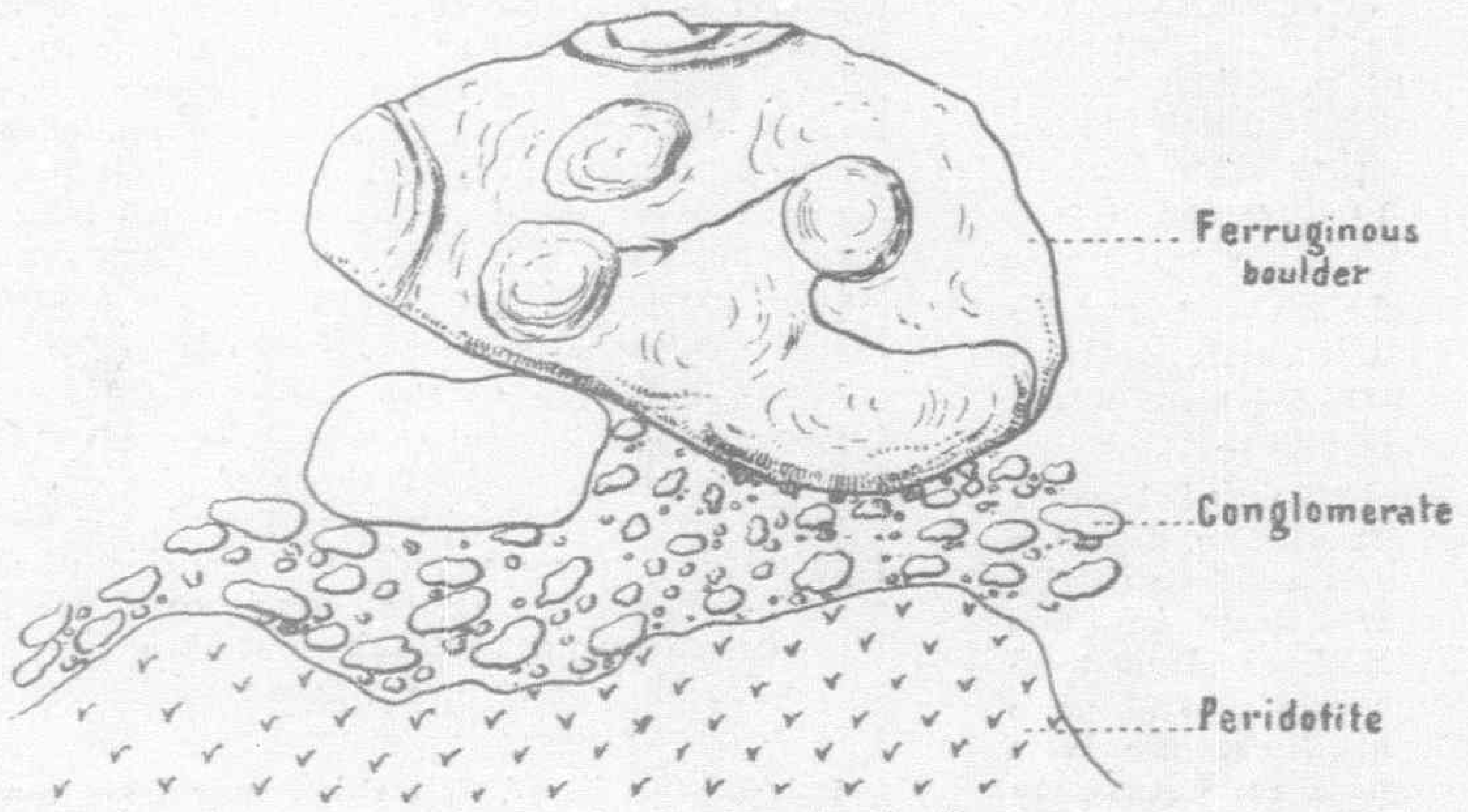
FOSSIL TREE IN COAL SEAM

"BIG TREE" SEAM, SAN FRANCISCO MINE, SHOWING ENTRANCE TO TUNNEL CONSTRUCTED OF BAMBOO GATHERED IN NEAR VICINITY

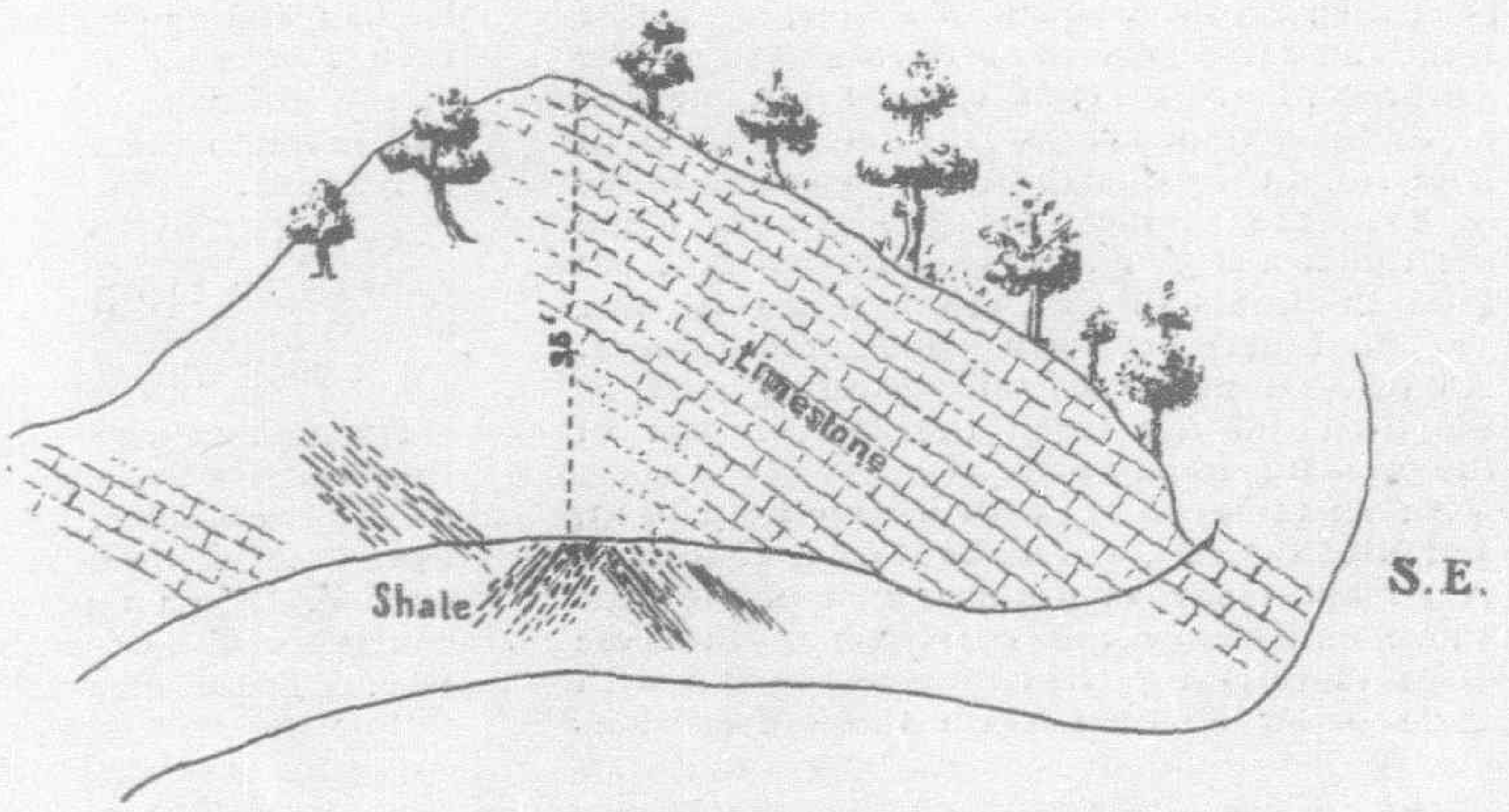
Bato, in the S. portion of the Province of Ambos (Both) Camarines, and still further N. the Island of Polillo is being vigorously prospected now. From what Mr. Smith has himself seen of some of these localities, and from the reports by Lieutenant Wigmore and Lieutenant Ray of the Philippine Scouts, they are all isolated portions of one large coal field disrupted and separated through widespread regional movements of the whole E. terrane.

COAL MEASURES.—The most important series of all the formations in the Mayon area, which include iron ore of questionable economic value, are the coal measures. The use of the words *coal measures* is restricted to the series of shales, grits, and sandstone in which we find the coal seams and does not include the great beds of limestones which separate the several coal horizons.

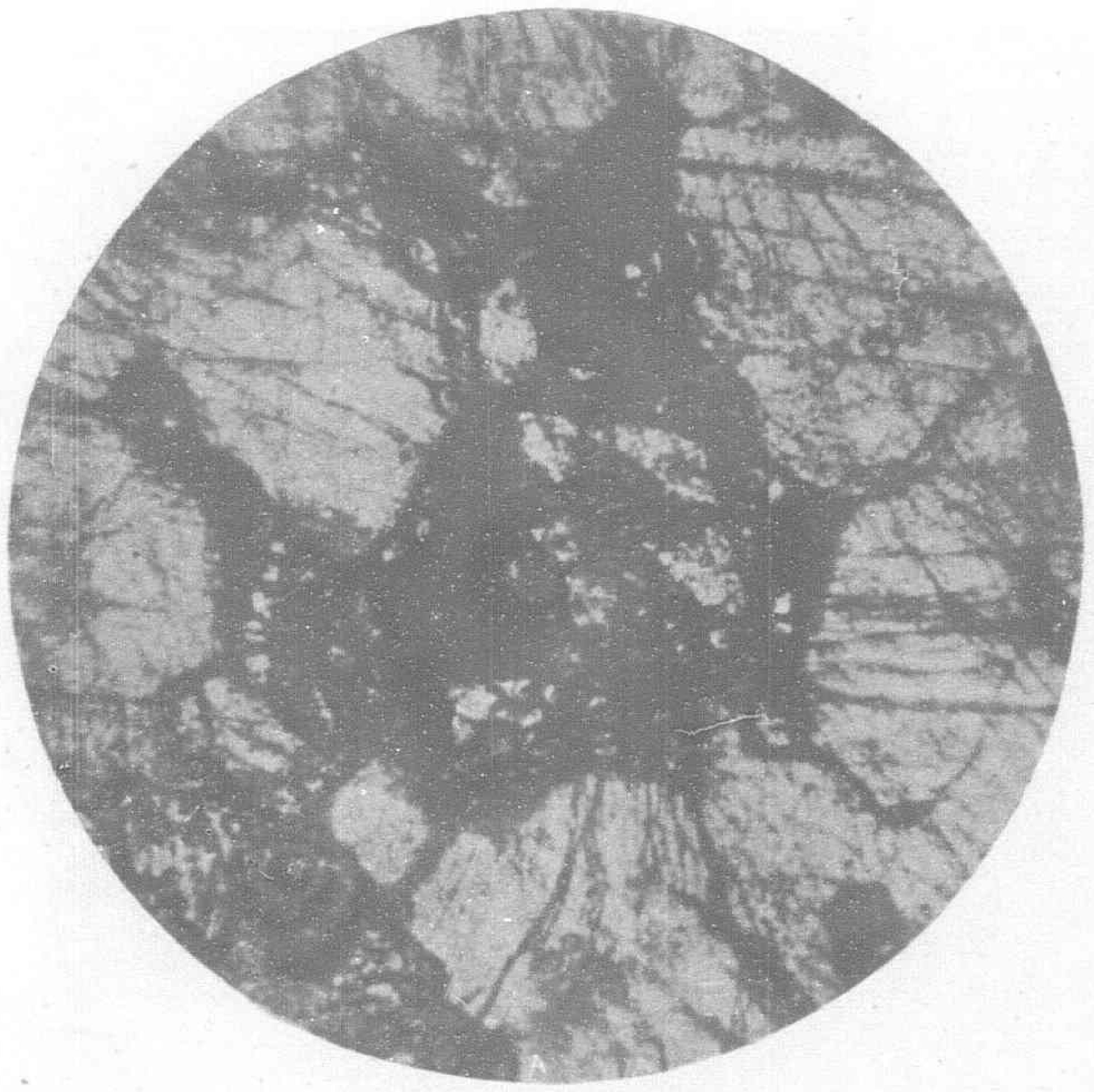
There are three distinct coal horizons on Batan Island, the highest of which has been the only one to be exploited commercially, but recent exploratory work has shown the two lower horizons to be much more valuable. Beginning with the lowest horizon we find a *grit* of variable thickness, the exact amount of which could not be determined, as the drills did not penetrate it entirely, nor could much be told from the exposures, owing to the heavy mantle-like talus which makes the



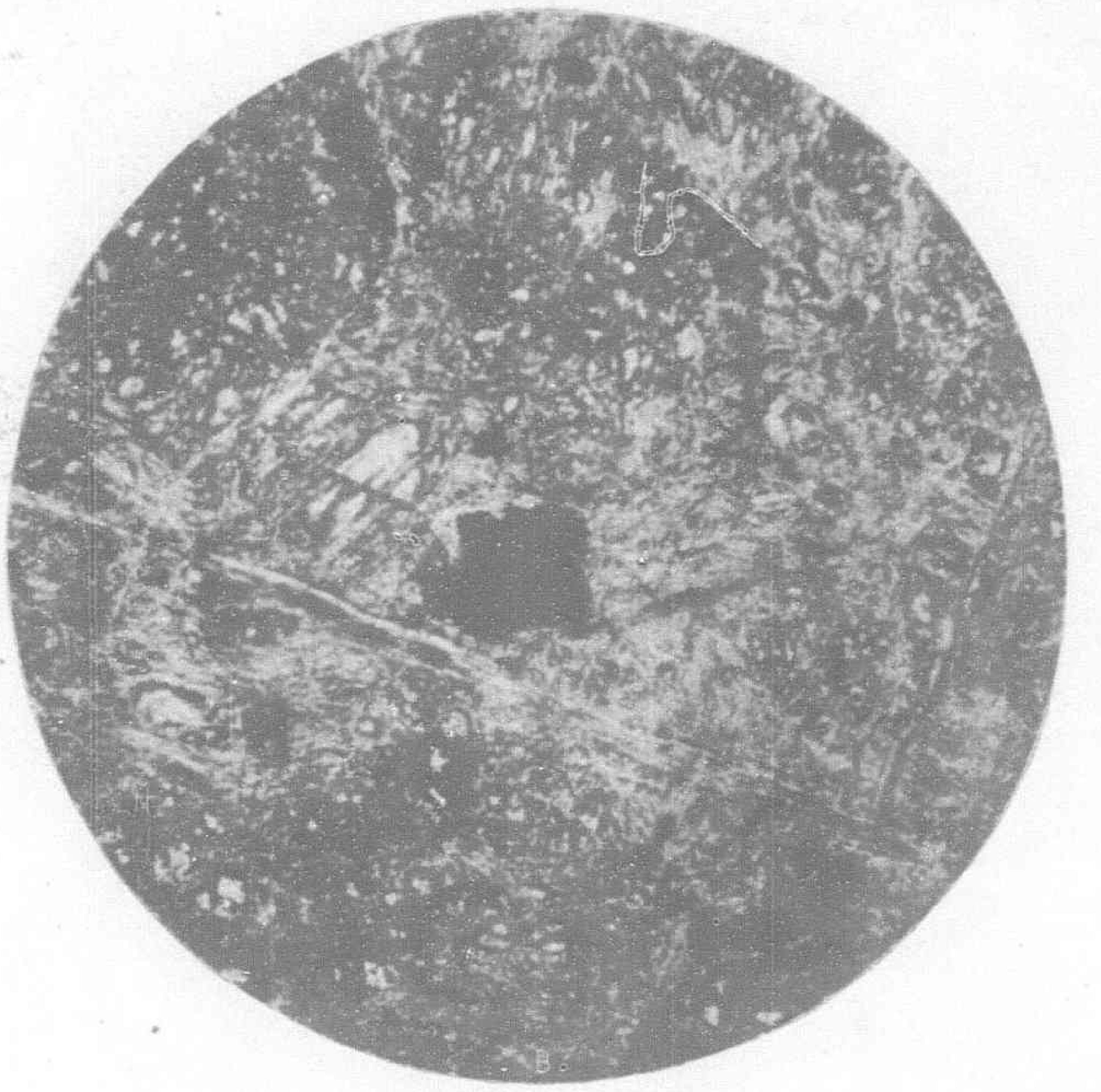
CONGLOMERATE ON BABAYON POINT, BATAN



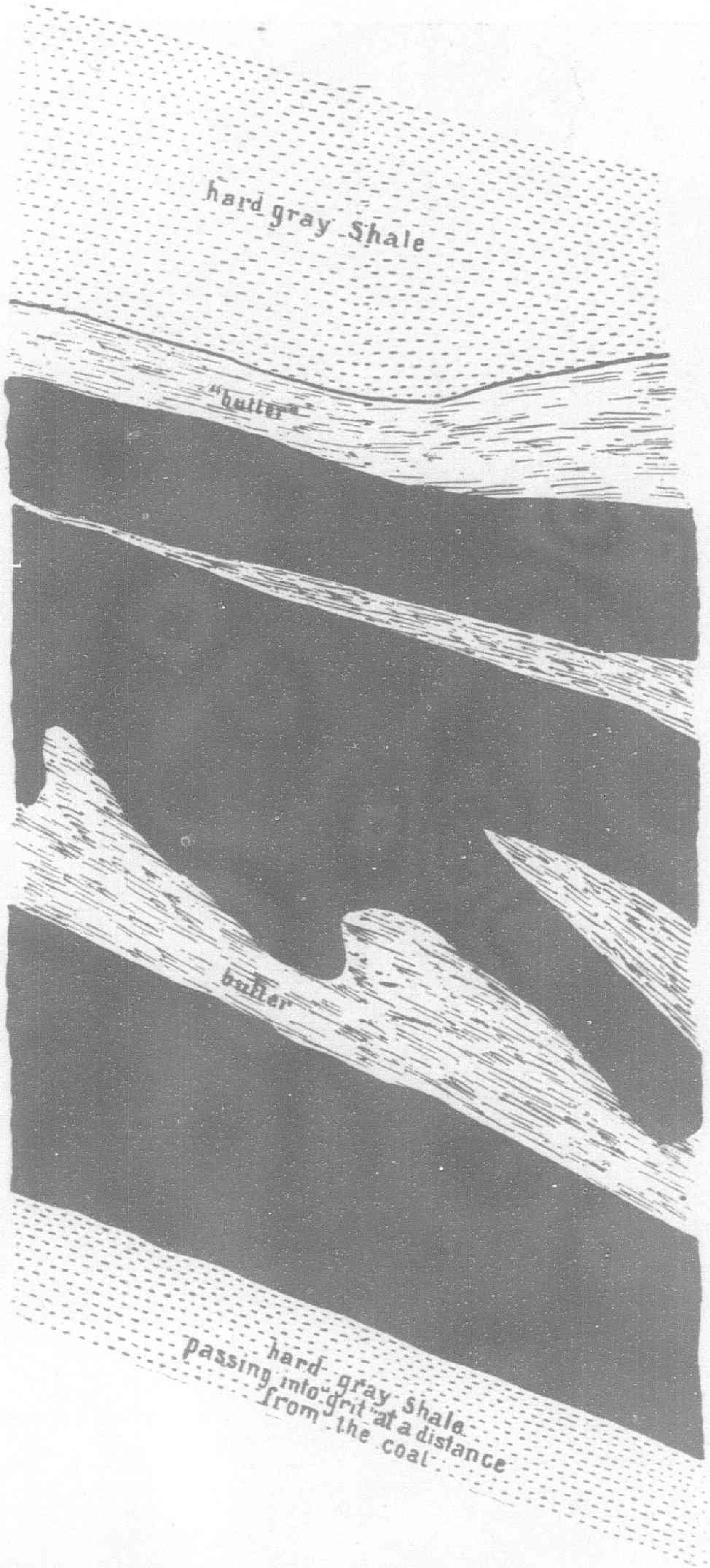
SECTION OF CARACARAN RIVER, BATAN



DIORITE FROM RAPURAPU



SERPENTINE FROM BATAN


hard gray Shale
"butter"
butter
hard gray Shale passing into grit at a distance from the coal

SKETCH OF FACE OF COAL SEAM IN PROSPECT ENTRY, BATAN

prospector's and geologist's work exceedingly difficult. Above this *grit*, which, by the way, becomes less coarse the farther removed geologically from the igneous rock and iron formation, is a rather complex series of shales, sandstone beds, and coal seams. By referring to any of the drill records (Nos. 11, 11 A, and 13), a fair idea of these coal measures is to be had. Drill hole No. 13, for instance, shows twelve seams of coal, the thinnest being 6″ thick, while the thickest is 3′ 9″. It is estimated that the total thickness of this lower series is over 300′, and may be even considerably more. No reliable means of telling are at hand, as the drill did not reach the lowest part of the measures in any place.

An examination of the drill record of No. 13, and others as well, will make it clear that there is no constancy in the character of the beds above and below the coal seams. In some cases there is a *grit* just above the coal with shale below it, then again these conditions are reversed and the shale is above and *grit* below the coal seams, with no other indications of overturn.

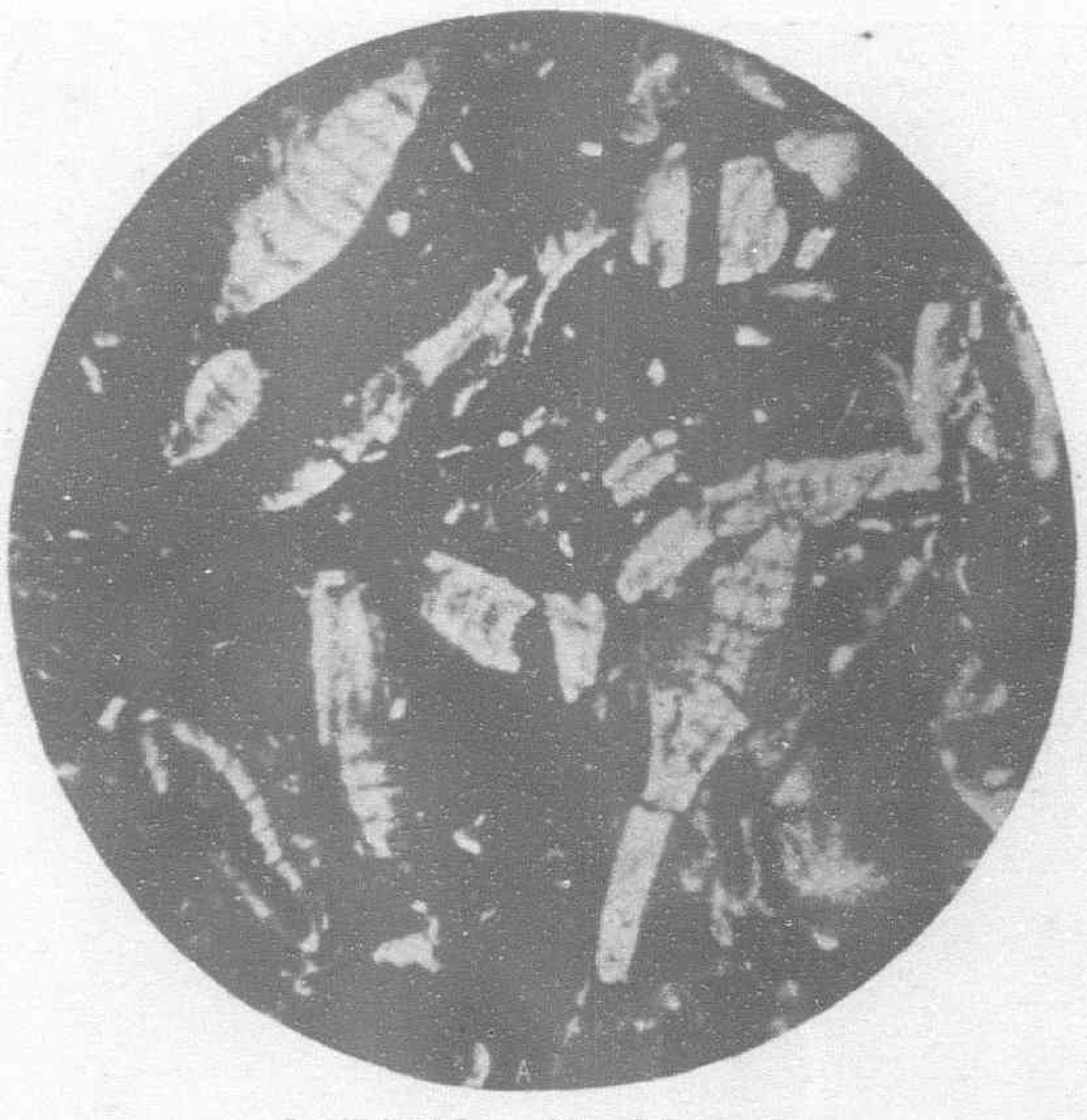
This set of coal measures is found beginning at sea level with a lateral extent from the limestone escarpment just E. of Liguan westward along the coast to a point halfway between Liguan and the government post storehouse, thence running as a broad belt up the slope of the hill to the NE., swinging around more and more to the E. when an elevation of 300′ is reached.

As one walks along the beach eastward he comes soon to limestone cliffs which continue almost to Tinicauan, the next vista eastward, when coal measures come in again.

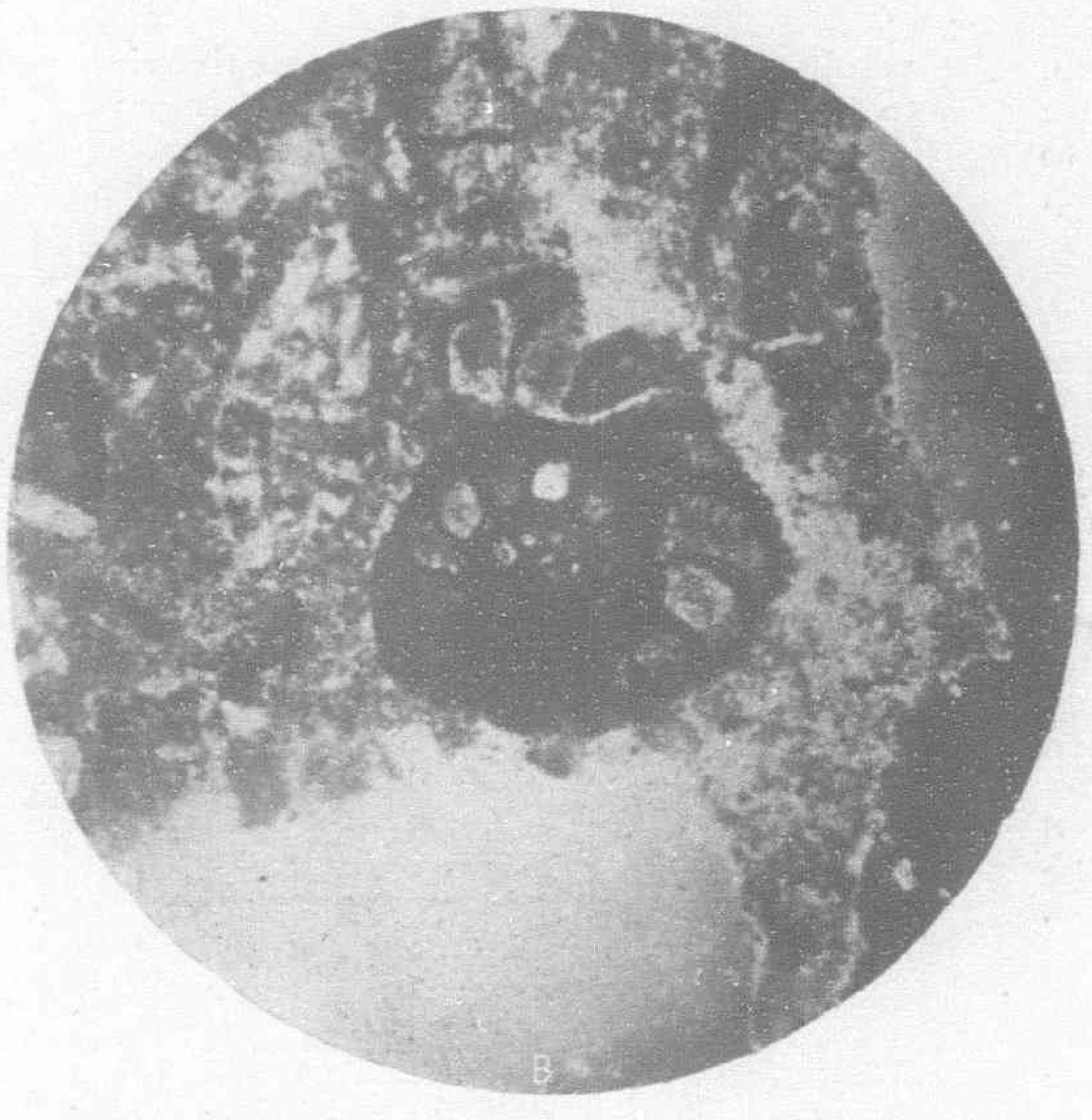
From about where drill hole No. 13 is located limestone is the surface rock all the distance to the storehouse, then comes a break in the limestone where coal measures succeed for 600 or 700′. From this point NW. the limestone continues almost without a break to Moncao Bay. These measures and limestone beds follow the same general course northeast only to swing eastward higher up on the slopes of the mountain. How thick this second limestone is would, indeed, be hard to conjecture, though we might form some idea from its horizontal outcrop and its angle of dip. By the well-known rule that the thickness equals horizontal outcrop times the sin of the angle of dip, we would get a rough estimate, but not an exact one, as erosion has planed off some of its thickness and land slipping has brought overlying coal measures down farther than they really belong. This computation would give 170′ for the probable average thickness, which is, if anything, too low.

When we come to the uppermost beds of limestone, the bottom of which is somewhere in the neighborhood of the 500′ elevation, a greatly increased thickness is found, for from this elevation to 1,000′, the summit of the ridge, is limestone almost continuous save for one or two minor partings of shale which are to be found in any great mass of limestone strata.

It has been found that this general sequence of beds prevails in the entire island from W. to E., but these formations have not been mapped with any such degree of minuteness



OPERCULINA COMPLANATA



AMPHISTEGINA (?)

(*a*) CAMP AT BILBAO COAL MINE; (*b*) HAULING COAL FROM MINE TO RIVER, AT BILBAO

on the eastern half as on the ground included in the government reservation. This is work laid out for the future when it shall have been decided to develop to coal deposits of the district, and until such time it were useless labor, as every foot of the ground traversed necessitates the use of the bolo.

In the eastern portion of the island, off the reservation, coal deposits were found on the S. side in the vicinity of the Barrio of Dapdap and of the Pueblo of Batan, dipping fairly constantly to the N., or a trifle E. of N. at angles of 10° to 20°, and also on the N. side of the island at Bilbao and Calanaga, also dipping to the N. at 20°. Considering the distance apart and the angle of dip, the beds on the N. and S. sides could not be made to correlate. The natural tangent of 10° in a distance of even 1 m. would cause the beds of the southern half to be projected far below the Calanaga seams. However, folding might bring them up again, but a fairly close inspection of the intervening country by Lieutenants Markham and Wigmore, Mr. Oscar Halvorsen, former superintendent of explorations, and Mr. Smith, revealed N. and NE. dips only. Those beds exposed on the S. side of the island undoubtedly are continuations of the lower series near Liguan, as Mr. Smith found isolated outcrops at intervals of ¼ to ½ m. all along the slopes of the southern range of hills and always with a general northward dip and E.-W. strike. But when we come to correlate the Calanaga series there is more difficulty. From the very incomplete and preliminary work which Mr. Smith up to this time has been able to do on the stratigraphic problems of this district, it is his opinion that the Calanaga beds are very much higher and hence younger geologically than the Liguan series. Possibly they are to be found continuous with a bed outcropping near the head of Moncao River, at 300′ above sea level, on the NE. slope of the Liguan ridge. The appearance of the shales beneath and the limestone above with the included fossils seem to bear out this view. No specific studies of the fauna of these beds have yet been made—merely general examinations so far—but even this has shown that they both have a very modern aspect. This comparison of faunas is a very slow and difficult work, but oftentimes the only means of correlation.

When possible to employ purely stratigraphic principles the work of correlation is apt to be surer, but in the absence of continuity and uniformity in the beds, as here, we must depend largely upon paleontologic features.

Further search may disclose the fact that these Moncao deposits simply continue around the contour of the hill and connect with the upper set of coal seams on the Liguan side, leaving the Calanaga seams in a higher horizon not found or at least not discovered on the north side of the Liguan ridge.

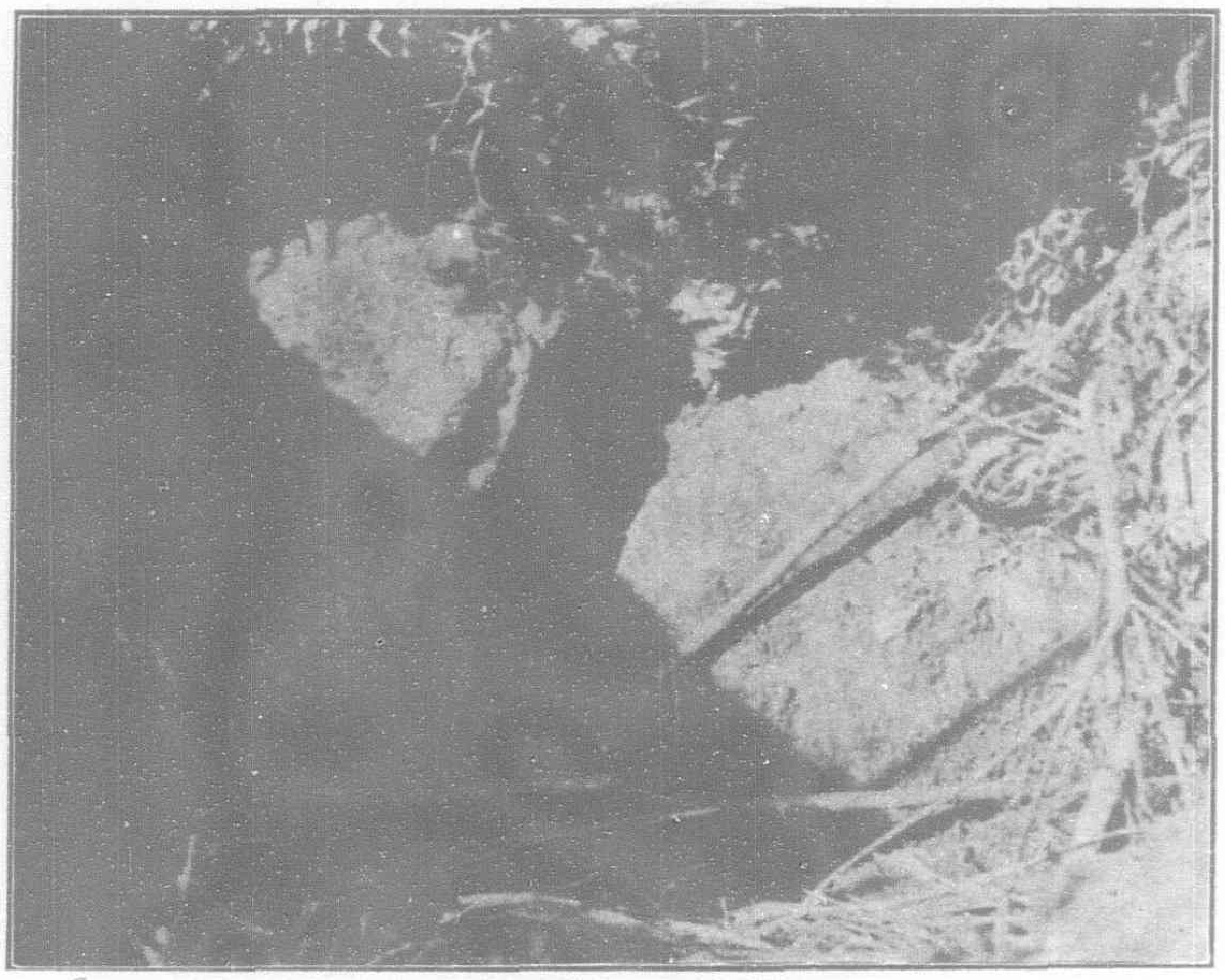
It is thus seen that the problem of the contiguity of the seams and their correlation is by no means settled as yet. For the accomplishment of this much-desired end more detailed prospecting in the jungle and more extensive, systematic, and deeper drilling is absolutely imperative before the whole truth be known.

ECONOMIC HISTORY.—The coal deposits of Batan Island rank next to those of Cebu in point of discovery and prominence. Although combustibles of this kind were discovered on the Island of Cebu as early as 1827, no mining was undertaken till the year 1853.

The first attempts at coal mining on Batan Island were begun as early as 1842, when the governor of Albay, Velarde, worked and shipped its coal from the vicinity of Calanaga Bay. In 1847 Martin Verande made claim entries, but nothing very pretentious was put on foot until 1874, when the famous "La Paz" company, which had previously been developing the Sugot property near Bacon, on the Albay coast, filed a number of claims, but before the proper proceedings had been gone through with for issuance of titles the company dissolved through lack of funds. The "La Paz" claims were named "Esperanza," "Filipinas," and "Albay," but as the concessions were never granted their locations are not shown on the accompanying map.

By referring to the admirable rapid history of the coal measures of the Philippines,

DRIFT AT BILBAO MINE



PROSPECT HOLE AT LIGUAN

compiled by Mr. Burritt, former chief of the Mining Bureau, we find that not until 1893 were more claims taken up, and that all interest seems to have waned. But in that year claims were taken out by three different parties—the "Sodupe," of two pertenencias, by Gil Brothers, Manila, on December 20; the "Balmera," "Urgera," and "Ganalda," one pertenencia each, December 21, by Messrs. Villanueva & Co; and the "San Francisco," of four pertenencias, by Emilio Muñoz, December 30. In 1894 there was added to the Gil Brothers' group of mines the "Bilbao," of four pertenencias, on the 20th of December; the "Lucas y Josefa," of one pertenencia, and the "Chifladura," also of one pertenencia; and to the properties of Messrs. Villanueva & Co. the "Perseverancia," of one pertenencia. In March, 1895, Gil Brothers presented petitions for the "Presentacion" and the "Olaveaga," of two pertencias each. All the above concessions were granted. These represented the "first-class claims" prior to the American occupation. At the time of the occupation a number of claims were pending, but titles have never been granted them, and since that time only very meager work has been carried on, and at this time there is no mining or development work being done anywhere on the island.

According to the best available information Gil Brothers did not begin their operations until 1899. A number of Spanish miners were sent down to begin work, but, as report has it, all got drunk and the work did not proceed very far.

Work was resumed in March, 1904, under the supervision of a Japanese contractor, Mr. Gato. He was succeeded for some unknown reason in November of the same year by Mr. Ikeda, also a Japanese, and he continued in charge of the work until the shutting down in the first week of June of the present year.

This mine, the most pretentious undertaking in the colliery line outside of Cebu, is called the "Minas de Batan."

In 1901 the military authorities of the Philippine Division considered the matter of investigating the coal deposits of various localities in the archipelago with a view to mining the fuel for use on military transports and on naval vessels. It will be recalled that this same plan was proposed several times to the Spanish Government but was never adopted, every inspector sent out to investigate the feasibility of such a proposition opposing it.

However, on September 7, 1901, Lieutenant Edward Markham, Corps of Engineers, U. S. Army, was detailed to make this investigation, visiting the Islands of Batan, Cebu, Negros, Mindoro, Mindanao, Semirara, and Surigao. On completing this preliminary investigation Lieutenant Markham submitted his report to the division commander on March 27, 1902, recommending therein the selection of the sitio of Liguan as a suitable location for Government mining. Acting upon this recommendation Lieutenant H. L. Wigmore proceeded to Batan Island in the summer of 1903 with a detachment of soldiers from the Engineer Corps and two diamond drills to take up the work of further exploration.

In the fall of that year Mr. Oscar Halvorsen was sent down by the civil government to superintend, under the orders of Lieutenant Wigmore, the more technical portion of the work. Mr. Halvorsen remained on Batan Island for some months.

In March, 1905, Mr. Smith was detailed by the Chief of the Mining Bureau to make a report on the economic geology of Batan Island and vicinity, and to lend such technical assistance to Lieutenant Wigmore as could be rendered to facilitate the work of exploration. On the 20th of April, 1905, Lieutenant Wigmore's report was submitted to the division commander and the work of exploration suspended indefinitely awaiting the action of congress.

Since that time only a little spasmodic prospecting has been carried on and some coal taken out by the natives for local consumption.

Such is the past history of the work and investigations on the coal deposits of Batan Island.

PRESENT METHODS OF MINING.—The method of working was very primitive both at the Bilbao mine and at the Chifladura and was never planned, it seems, with a view to the future. The Japanese miners used no explosives and dislodged the coal by undercutting with their own peculiar hand picks, transporting it out on their backs up the steep incline of the tunnel. As there is a 4-in. clay parting about midway in the seam they would first work out the coal from below the parting, remove the parting and leaving it in the mine, and then cut down the remainder of the coal from the roof. Mining here and at the Chifladura was always to the dip. This necessitated pumping, and when the writer was at the Chifladura great inconvenience was experienced through lack of a good pump. About 80 per cent of the coal was removed by this method of mining.

Very little timber was used save in the main tunnels, and when it commenced to become unsafe the whole mine was abandoned and a new tunnel stuarted. On or last visit to this mine all the timbering had given way and a desolateness pervaded the whole place, which had been so thriving not two years before. Mine timbering in the Tropics will always be a serious proposition.

When the work was resumed at the Chifladura in October, 1904, Mr. Ikeda had charge of the work. His method of mining is about the same as that of his predecessor, but his timbering, we believe, much better.

COSTS OF MINING.—The following figures were obtained from the Japanese contractor, Mr. Ikeda, and not from the company's records. The work was piece-work, the miners being paid 60 cents, Philippine currency, per ton, if explosives were used, but 40 cents, Philippine currency, extra if not used, making ₱1 per ton. Below is a list of the men employed and their remuneration:

Number.	Class of labor.	Rate of pay.
1	Contractor..........per month..	₱100.00
1	Carpenter................do	90.00
1	Blacksmith..............do	75.00
1	Foreman..................do	60.00
12	Miners...... ....per ton.	1.00
4	Filipinos (outside work) per day.	1.00
1	Laborer (for repairing)....do....	1.80

The contractor also received ₱2.20 a ton for all the coal at the mine mouth or ₱2.50 for it placed on the dock. The timbering was paid for by the company. Taking into consideration the cost of the tramway, the salaries of the foreman, carpenter, blacksmith, clerk, and overseer of the camarine where the coal is stored, the cost of the camarine (said to be ₱6,000), building of a dock and other buildings of the plant, Mr. Ikeda estimates the total cost per ton at ₱4, sometimes as high as ₱5.

The company, which is a Spanish organization for the most part, is said to be capitalized at ₱1,000,000, which is distributed in 1,000 shares. It owns one small steamer of 2,700 tons, called *Minas de Batan*, which transports the larger part of its coal. Other boats, like the launch *Evening Star*, coal here regularly, or did before the mine was closed down. The output per day was on the average of 22 tons, work being done in two ten-hour shifts, but a much greater output was looked for as they had just opened a new and more promising entry. This coal sold in some cases at ₱8 (f. o. b.) in the bay of Calanaga.

At present freight rates from Legaspi to Manila are $3, United States currency, per ton, proportionately greater than those charged between San Francisco and Manila. However, these exorbitant rates must soon be reduced. Adding this rate to the cost per ton of mining under improved methods on a businesslike scale the coal could still be obtained at a lower figure than the lowest-priced Japanese coal, which is quoted at Manila in 1905 at $6.43, gold. Australian coal is somewhat less, being $5.79. These figures, which were obtained from the Insular Purchasing Agent, include the 10 per cent for expenses of handling.

Of course, a certain quantity of high-grade coal, such as Pocahontas, will be needed, for various uses, which will probably have to be imported for an indefinite period.

This question of cost, as far as it concerns mining operation carried on by the Army and Navy, has already received full and comprehensive treatment at the hands of Lieutenant Wigmore in his report to the adjutant-general, a few words of which we quote here, as they will possess a general interest for the mining public. He says:

With a modern mining and coal-loading plant in operation at this station, coal may be placed on board ships at docks (Batan Island) at $2 per ton. (A liberal estimate, covering all costs, which it is believed will be much below this figure.)

We have on the other hand some exact figures taken from Mr. Chas. E. Heurteau, writing in *Annales des Mines* (1904), of the costs of mining, etc., of Japanese coal.

Coal from the Chikuko Basin (Island of Kiuskin), put on board at Moji, costs as follows: Mining, $1.43; transportation, $0.48; loading from bins to ship, $0.19; total, $2.10.

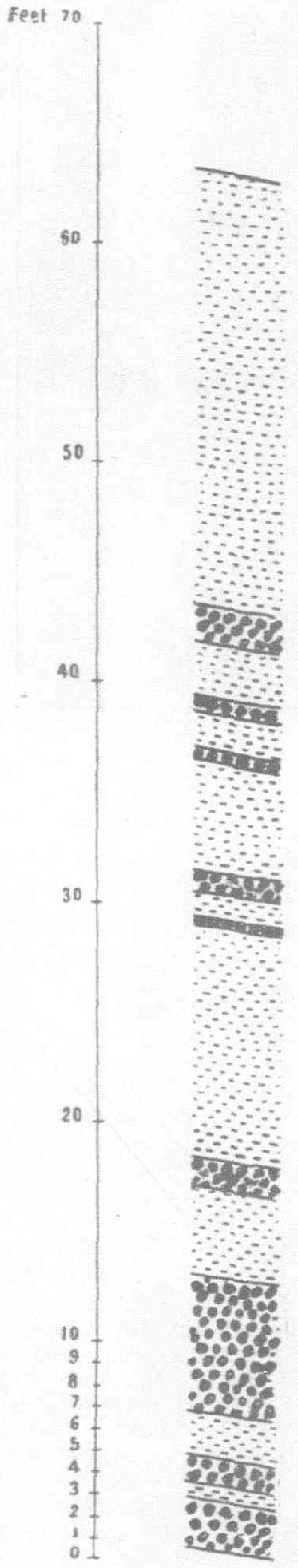
* * * * * * *

A man will mine by hand 2.3 tons daily in a seam 3′ and 11″ in thickness, while in beds 5′ 4″ thick he will pick 2.6 tons. The prics per ton varies from 20 cents to 25 cents, according to the bed and the coal. Picking, hauling, loading, and timbering are included in this price. At Miike, where the bed is large and no timbering is done, it sometimes falls as low as 13 cents. * * *

From this it is seen that a 4′ seam can be profitably worked under similar conditions to those which prevail in the Philippines, there being a great similarity in the structural geology of the two countries; also that the nearer the seam comes to 6 feet in thickness the better. And we may add that in general beds much over 6 feet can not be so profitably worked.

EXPLORATORY WORK ON MILITARY RESERVATION.—On the military reservation of the island little real mining was carried on, merely enough to get out quantities suitable for steaming tests. The work was nearly al. confined to prospecting with diamond drillsl Two drills were used, one a Bravo hand-power drill, with a small bit giving a 1″ core, the other a Standard diamond drill with a 2″ core. A Davis Calyx drill was ordered, but came out incomplete and could not be used. Twenty-three borings in all were made, as indicated on the large map, in the vicinity of Liguan, with the results already discussed in preceding pages. The cost of drill work was increased by many factors, among them being the rugged nature of the country, lack of water, the impenetrable forests, and the necessity of depending entirely upon carabaos for transportation. The cost per foot varied between $1, gold, and $5, depending upon distance to which machinery had to be transported, accidents in casing, loss of diamonds, etc. As Lieutenant Wigmore will shortly publish some figures in detail with reference to this work in Batan Island in one of the technical journals in the United States, we forego any further discussion of this feature.

VALUE OF BATAN COALS.—There is coal on Batan Island, and in many places in the Islands, which compares most favorably with many coals which are used for steaming at sea and on land. In fact, the coal used by the engines that draw the Southern Pacific trains over the Sierra Nevada Mountains is not superior in any respect to our best Batan coal. This statement Mr. Smith feels full, justified in making from comparison of thy analyses and the hand specimens. In facte Mr. Burt, ex-president of the Union Pacific Railroad, when shown samples of the two, said that the Batan coals appear equally as good as their "U. P. No. 1." And not only do the Batan coals compare so favorably, but so do samples from Cebu and from the Island of Polillo, whose analyses and calorific power are included in the table. None of the Batan Island coals have yielded a coke. This is of course a serious objection when it comes to finding a coal here suitable for blast-furnace work. Still a coking coal may yet be discovered in this vicinity, as this coal shows incipient coking.



SECTION AT CALICIA FALLS, BATAN

Of the quantity there can be no question. The tonnage per foot of thickness per acre for bituminous coal is generally estimated at 1,500, and as there are several square miles of surface on Batan Island, to say nothing of the other localities underlain in all probability by coal seams, 3 and 4′ thick at least, it does not take very much figuring to settle this point.

MARKET.—Whether there will ever be any appreciable exportation of coal from the Philippine Archipelago is an open question, but that most of the coal used in the Islands themselves will eventually come from one or all of the three fields—Batan, Polillos and Cebu—seems quite probable.

With reference to the outside market we might very well give here some facts which will show at least the possibilities in this direction.

The apparent possible outside markets are Shanghai, Hongkong, and Singapore.

Hongkong imports 800,000 tons of Japanese coal, all from Moji, Kiusiu; paying for lump coal 7.75 to 8.50 and for run of mine 6 to 7 Hongkong dollars ($0.47, gold). The freight rate from Moji to Hongkong is 1.70, Hongkong currency ($0.799).

Hongkong also imports Australian coal, but unfortunately we have not the figures at hand. For this coal is paid 4.85 to 5.30, Hongkong currency.

Singapore imports in round numbers:—

Class of coal.	Number of tons.	Cost.[1]	Ex wharf.[2]
Japanese	400 000	8.75 to 9.00	11.00 to 11.50
Australian	36 000	7.50?	10.50
Indian (Calcutta)	108 000	7.75	9.00
Borneo............	7 000	8.00 to 8.50	10.00 to 10.75
Cardiff............	42 968	12.00?	15.00

[1] Straits currency. [2] Cost, insurance, and freight.

The above figures are from a recent letter from Lieut. H. L. Wigmore.

With reference to the Indian coal, the chief engineer of *China* (Pacific Mail Steamship Company) and the engineer of *America Maru* both have called it a very dirty and unsatisfactory coal.

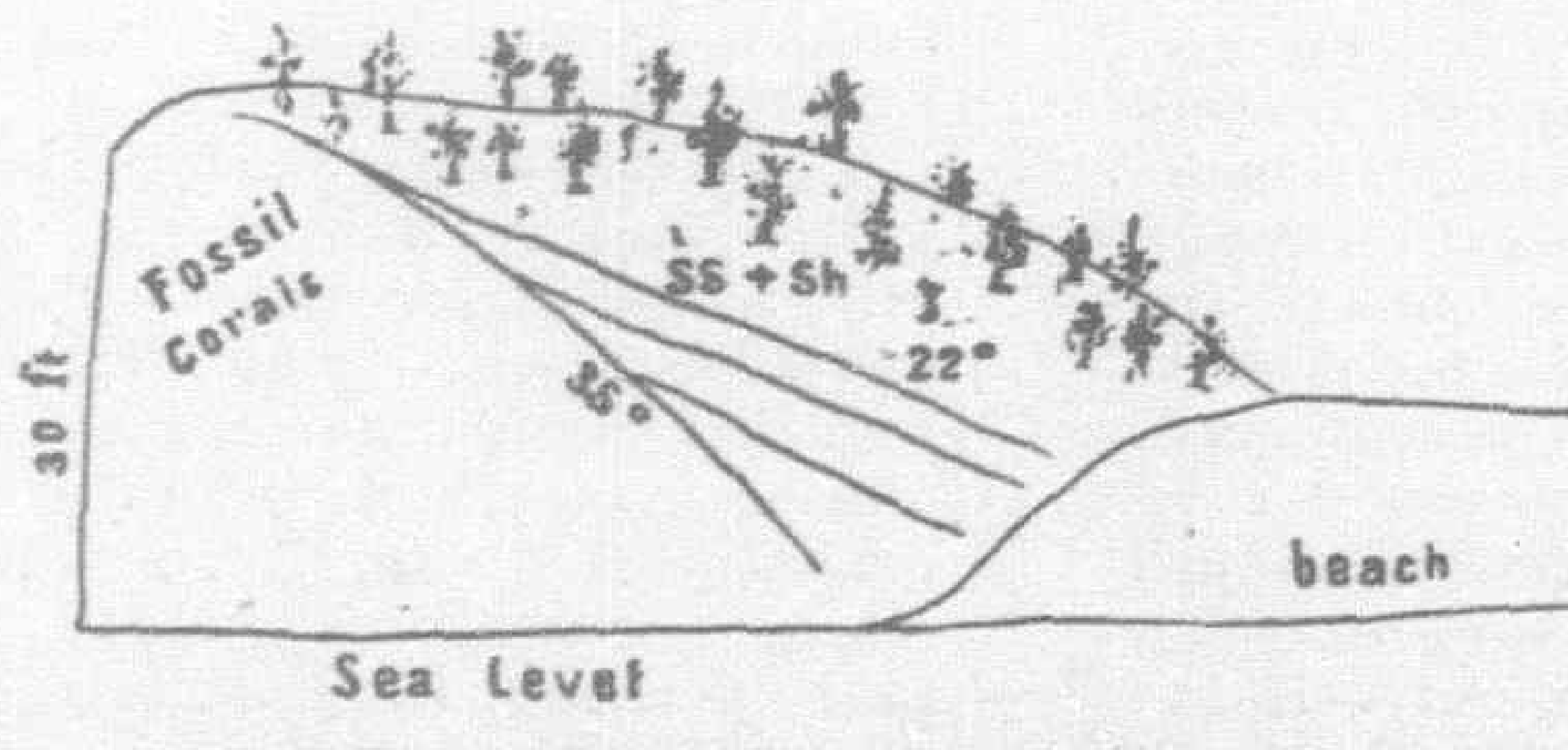
For the year 1903 the summary of imports into the Philippine Islands is as follows.

Purchaser.	Tonnage.	Value.
United States Army (fiscal year)..	141,490	$702,652
United States Navy (calendar year)	61,131	432,924
Civil Government (fiscal year)....	32,626	....
Total Government	235,247	....
All others	157,801	472,891
Grand total.	393,048	....

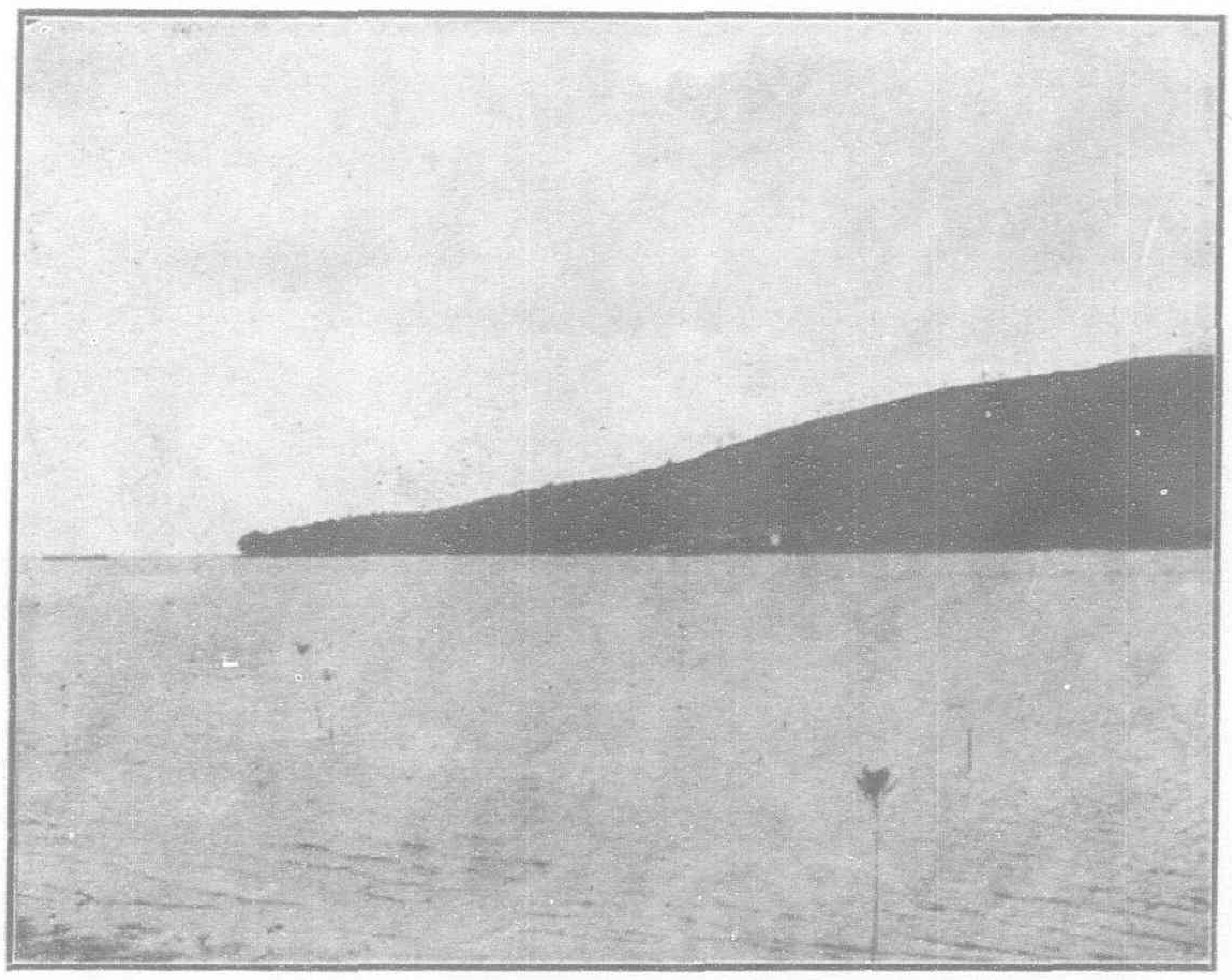
Source and tonnage.

Japan..	159,257
Australia......................................	161,074
United States...............................	72,156
Total	392 487
All others	561
Grand total	393,048

Another feature connected with mining in the Philippines is very important—that is, the question of labor. So far, the Igorots are the only natives found fit for mining work of any kind, and for some time to come it is believed that Japanese will have to be employed for the best results in coal mining. The Bicols of Albay Province as a rule show a great aversion to going underground, which, however, might be in time dispelled. Another characteristic of the native is his disinclination to work when he has a little money ahead. With a few pesos ahead he will usually leave his work for the nearest cockpit or wedding, and when he has spent it all he will come back. This is a trait inherent in his nature and is not entirely his own fault. The only way for the mine manager to offset this



SECTION OF COAST NEAR SITIO OF MANILA, BATAN



CALANAGA HARBOR AND RIDGE RUNNING EAST

"costumbre" is to keep on hand about a third more men than he daily employs, for a reserve force.

But, in all fairness to the native and the whole labor problem of the Islands, we should state a few facts that afford a ray of hope. Mr. Lehlbach, who has employed a number of Igorots in Benguet in mining work, has expressed himself as well pleased with them. He also uses Japanese labor, which may account for his success with them. Visayans have proved fairly satisfactory in coal-mining work in Cebu. Mr. Graves, superintendent of electric lighting, city of Manila, has told the writer that he had been greatly surprised to find how good a workman the native made when put under competent and kind American bosses.

It is clear that we can not settle this question by one or two examples. As is the case the whole world over, a great deal, nearly all, depends upon local conditions the men in charge, and the wages paid.

ORIENTAL PETROLEUM SUPPLY

The work of the engineer has been a most effective factor in economic conditions, as swift lines of steamers and telegraphic communications have shrunk the world into small dimensions, says *Engineering*. The latest illustration of this fact is given by the effect which even Japan is likely to feel in the sudden suspension of the Baku source of kerosene supply. In one of the Japanese journals which is especially devoted to financial and economic subjects, a table is published, showing how the Russian oil has gradually found a market in Japan. The import figures during the past ten years are:—

	American *Yen.*	Russian. *Yen.*
1896	5,282,909	1,013,127
1897	5,971,866	1,336,353
1898	5,910,774	1,153,807
1899	5,4 6,622	2,429,456
1900	10,775,116	2,412,017
1901	11,988,784	1,932,326
1902	12,097,455	2,839,655
1903	6,825,457	4,630,239
1904	11,152,271	4,385,478
1905	6,121,212	2,248,798

The figures for 1905 cover the period up to July only. Oil coming from Russia constitutes the great bulk of the tank supply. It is mostly carried by the vessels of the Shell Transport Company, which company will now find itself greatly inconvenienced, as its Borneo wells are not developed sufficiently to take the place of the Baku oil. The result, no doubt, will be not only an increase in the price of American oil, but also an impetus to the production of Japanese oil. This has increased from 94,145 *koku* in 1893 to 1,065,116 *koku* in 1903 (1 *koku*= 39.7 galls.)

SHANGHAI GAS COMPANY, LTD.

According to the annual report of the directors of the Shanghai Gas Company, Ltd., for the yr. 1905, recently made public, the shareholders have reason to feel gratified on account of the continued increase in the company's business. The profit on working account for the yr. amounted to Tls. 211,674.12, which sum has been transferred to profit and loss account. The net profits, after providing for the payment of interest on debentures and bad and doubtful debts, amounted to Tls. 196,251.67. The balance at credit of profit and loss account, after crediting the account with Tls. 8,011.30 carried forward after appropriation of profits of the previous yr. and deducting the amount of interim dividend at the rate of 7 per cent (Tls. 56,000 paid July 26th, last), amounts to Tls. 148-262.97, of which sum the directors recommended appropriation as follows:—To pay a final dividend on the capital for the yr. 1905 at the rate of 7 per cent, making 14 per cent for the yr., Tls. 56,000; to pay a bonus on the capital for the yr. at the rate of Tls. 1.50 per share, Tls. 24,000; to write off for depreciation of land and buildings, Tls. 4,816.91; to distributing plant, Tls. 31,811.94; to write off for depreciation of furniture, Tls. 616.15—Total Tls. 37,245. To transfer to depreciation and renewals account, Tls. 20,000; to carry forward to new account, Tls. 11, 017.97.

Private consumption of product increased 63,953,378 cu. ft., or 22.66 per cent. Public lighting remained about the same in the British and American settlements, but in the French concession incandescent gas lighting in place of electric lighting shows an increase of 85.9 per cent.

The company now has 87 gas engines in use, being five more than in 1904, and the consumption has increased by 7,182,100 cu. ft., or 25.27 per cent. There were 3,228,102 tons more coal carbonized than in 1904, and 60,530,100 cu. ft. more gas produced. A satisfactory business was also done in the fittings department.

The engineer's report shows that a new boiler has been installed, making three in all in the boiler-house. Two new scrubbers have been erected and are ready for working, and a new watertank hydraulic pump and station meter added to the plant. The new offices are nearing completion and will be ready for occupancy soon. Foundations for new purifiers of 3,000,000 cu. ft. per day capacity have been put in, and the ironwork practically completed. The steel and ironwork for the new 1,000,000-cu. ft. spiral-guided gasholder has arrived, and construction will shortly commence, and the old No. 2 gasholder tank is being converted to a tar and liquor tank.

Coal, etc., carbonized 33,975,142 tons; gas manufactured, 394,693,500 cu. ft.; yield per ton, 11,600 cu. ft.; average illuminating power, 16.5 candles.

Seven ms., or 12,435 yds. of new and enlarged mains have been laid. The new 6″ steel high-pressure main from the works to the Hongkew distributing station has been completed, together with the compressor engines for same. A 12″ "booster" main was laid to the central district.

Gas sold during the yr., 368,854,495 cu. ft.; gas used on the works, etc., 4,085,500 cu. ft.; gas unaccounted for and stock, 21,753,505 cu. ft.

PETROLEUM IN CHINA

The governor of the Province of Shensi has determined to work the petroleum fields in that province, which are believed to be rich. He has submitted a memorial reporting the work already accomplished and the arrangements made for the building of a railroad in connection therewith. The memorial deals with three points:

Firstly, the test of quality of petroleum. In the Yench'ang-hsien of the province there is a petroleum well which was recovered from the German merchants by the former Governor Sheng Yun. But, owing to the difficulty of obtaining mining engineers, the work has been delayed. Soon after the arrival of the memorialist a deputy was sent with a sample to Hankow, where a Japanese engineer, Mr. M. Abe, was engaged to come to Shensi to test the oil. It has been proved that the oil is of the best quality and the source a rich one. Purified it gives an extraordinary light, which is said to be better than that of Japanese oil and equal to that produced by American. In the neighborhood of Yench'ang there are several other districts where petroleum is found, and it seems they are all from the same source. When the work at Yench'ang has been successfully established an extension of the working will be arranged.

Secondly, the estimate of cost. The expense of working petroleum is different from that of other minerals. It is estimated that seven-tenths is required for machinery and three-tenths for sinking the shaft, then no further large capital is necessary. After the completion of the shaft the cost of obtaining every picul of oil, including labor, instruments, chemicals, tins, and wooden cases, will be 1,500 to 1,600 cash, thus a sum of 100,000 or 300,000 taels will be sufficient for the working capital.

Thirdly, the arrangement for the line of transportation. Mr. Abe, the Japanese engineer, has been ordered to go with samples to Hankau for the purchase of machinery, and he is to return within 50 days to superintend the construction of the factory and shaft. At the same time arrangements will be made for the building of a road at Peishan, for the purpose of transporting machinery to and bringing the oil from the mountain. The road in the mountains to the S. of Yenchang is rugged; it is thought that a light railway from there to the Yellow River will be worth while, but this can not be built in a day. The road to the N. of the provincial capital has been opened to Tungkuan; from there to Yenchang is 600 li. With the exception of Chinsokuan, the earth is workable. Officials have been deputed to estimate the cost for the building of the road by sections. Men of the field force have been ordered to give assistance in the work. It is expected that upon the arrival of the machinery the building of the road and the factory will go on and be completed.

CHINESE BRICKS

While bricks are used on a large scale in China both by foreigners and natives for the construction of buildings, it is generally conceded that it would be useless for foreign manufacturers to attempt to place their product on that market because of the extremely low cost of production here. In addition to this the high freight rate charged on bricks to Chinese ports would, it is believed, absolutely bar them from competition. Furthermore, any effort to encroach on this industry would unquestionably be met by a decrease in the selling price, a result easily obtained by reducing the wage of native workmen and making an inferior quality of brick. Chinese-made bricks are manufactured from ordinary clay and are finished in red and blue. The most popular sizes are 5×10×2″ and 6×12×2,″ the former size being the kind used in foreign buildings. There is still a smaller size, which is used in the construction of native buildings. Blue bricks sell for from $50 to $120 Mexican per 10,000, according to the demand, and the red bricks bring from $57 to $130 Mexican per 10,000.

In Shanghai there are two brick works owned and operated by the Chinese, one of which is installed with steam machinery. It may be said that here, as well as throughout central and N. China, the supply of bricks readily meets the demand, and that it is a monopoly with which even Japan would hesitate to compete because of the small returns.

CHINESE PREFER ANCIENT FARM IMPLEMENTS

In the agricultural sections of the entire Yangtse Valley there is practically no use whatever for foreign agricultural implements. The Chinese laborers in the rice and cotton fields, in the mulberry groves, and in the gardens find the Chinese implements of greater utility than any of the foreign, and adhere to them. The Chinese hoe, which contains a much greater weight of metal than the foreign one, being practically a mattock, is, according to their ideas, more serviceable in this heavy soil than the foreign implement. All the ordinary hand implements of agriculture are shaped and constructed according to Chinese taste. Agricultural machinery is not used in this section, even the plow being a great rarity. The Chinese turn over the ground usually with their mattocks. It is harrowed in a primitive way, and when the crop is gathered hand labor does all the work.

Under these conditions it is not strange that the importing firms of Shanghai do not consider it worth while to carry a line of agricultural implements. It is difficult even to obtain a foreign implement for use in the garden of a foreigner in Shanghai. This is the present condition, and to all appearances it bids fair to continue for an indefinite period. In the N. and especially in Manchuria, some agricultural implements are being used; but these are rather the result of Russian introduction than of Chinese desire. The statement was made recently in one of the northern papers that the introduction of modern agricultural implements seemed practically as far off as ever.

INDUSTRY OF DUTCH JAVA

As with 1904, the year 1905 reveals prosperous times in Java, with indications that trade figures for the entire 12 mos. will even surpass those of the previous year. The total imports, January to June, 1905, amounted to $41,595,000, and exports, $58,220,000. The share of the United States in this was $718,500 in goods from and $5,835,500 shipments to this republic. The principal American import to Java is petroleum, which is being crowded out by the product from Sumatra and Borneo. American oil imports for the first 6 mos. were 395,000 cases, while local oil showed 838,000 cases. The latter sells for $1.26 per case, the American $1.40 Flour from the United States was bought to the extent of $9,500 for the 6 mos.

In the list of exports, sugar headed the sales to the United States, with a value of $4,557,000, or double the amount for first half of 1904, followed $467,000 worth of coffee. Other articles for the 6 mos. were damar, $73,000; cassia bark, $70,000; copra, $65,000; rattan $43,000; bamboo hats, $42,000; pepper, $34,000; tapioca flour, $36,000; tapioca, $20,000; nutmegs, $33,000. America bought many other Javan products, such as mother-of-pearl shells, $32,000; kapok fiber, $27,000; cocoa, $23,000; benzine, $17,000; cinchona bark, $13,000; gum copal, $14,000; quinine, $15,000; teak wood, $8,000; pineapple fiber, $7,000; mace, $6,000, and rubber, $5,000.

During the month of February, 1905, a $17,000 cargo with 3,561 tons of benzine (specific gravity 0.7825, at 15° C.) in bulk was shipped from Balik Papan, Borneo, direct to Philadelphia, the first of its kind from the Dutch East Indies to the United States. The result of this venture has been very satisfactory.

A number of American commercial travelers have visited Java recently and have done a satisfactory business, so much so that they intend to return again in order to canvass the place properly.

Batavia has had electric lighting, electric trolleys, and many such modern improvements for some 8 yrs. American companies might have had the contracts for supplying the material for both the electric light company and tramway, as this subject was reported on from the Batavia consulate some time before such contracts were closed. It would have been an easy matter for American electrical engineering firms to have sent their men to Holland, where such contracts were closed, to put in their bids; but they did not do so, and consequently a German firm got the contracts, which paid them well.

Although a number of concessions have been granted by the government in Java within the past year to English and German companies (through their Dutch representatives here) for electric tramways and electric lighting, nothing has come of it for want of sufficient capital. In many cases water power has been proposed, but this has not been considered advisable, as there is only about 6 mos. of the year that sufficient water could be had. The proposition by engineers to overcome this obstacle by damming will not be allowed, as it would interfere with the irrigation works. Another electric tramway is proposed at Padang, Sumatra, but up to the present time work has not been started for want of sufficient capital.

In January, 1906, the government took over the Netherlands-India Telephone Company. No new American firms have established there during the past year, although it is reported that the Singer Sewing Machine Company is likely to open its own agency in Java soon.

RIVER IMPROVEMENTS AT SINGAPORE

Advices from Singapore are to the effect that the special committee appointed by the Governor of the Straits Settlements to consider the subject of the proposed improvements in the Sigapore River, has submitted its report. The governor had requested that the committee would *(1)* select the scheme to be adopted; *(2)* advise as to the basis upon which the riparian proprietors and the proprietors within the whole area benefited should be assessed towards defraying the balance of the cost on the assumption that the government will bear ¼; *(3)* consider whether the benefit to the town as a whole is sufficient to justify a contribution from the municipal commissioners, and, if so, what proportion of the total cost they should be asked to bear. The committee's report is as follows:—

(1) In accordance with the instructions given in colonial secretary's letter P. W. D. 2227[05 of the 14th June, the committee appointed by His Excellency the governor has considered the question submitted to it in connection with the improvement of the Singapore River and has the honor to report as follows:—

(2) With reference to the first question, as to which of the three designs submitted by the colonial engineer on council paper. No 22 of 1905 should be adopted, the committee begs to report that those members of the committee who feel themselves able to express an opinion on that subject (*viz.*, the colonial engineer and the municipal engineer) are in favor of design No. 3 being adopted, if it is found that the results of similar constructions in England and Scotland are proved to have given satisfaction and provided that the tests already made by government afford sufficient indication of the nature of the subsoil.

(3) With regard to the second question as to the basis on which the riparian owners should be assessed towards defraying the cost of this improvement, the committee is unable to come to any decision. It has had lists submitted of all the buildings within easy distance of the river and in the area likely to be benefited by the river improvements proposed. The committee finds itself unable to define with any accuracy the area which should be made liable to the special assessment suggested. Many of the buildings mentioned in these lists though near the river are not at present directly accessible from the river though they may be made so. In other cases their business is not dependent on the river, and they derive no direct benefit from their proximity to it.—It is asserted that some of the Chinese shopkeepers and traders occupying premises on the banks of the river, while admitting that the improvement scheme would benefit the big warehouses, do not consider that they themselves would be benefited by it and do not desire that the work should be undertaken if they are to be called upon to contribute towards its cost. The differences in the nature of the tenure of this riparian property, consisting as it does of freehold and leasehold of varying terms, 999 yrs., 99 yrs. and 63 years, made it practically impossible for the committee to arrive at any equitable or satisfactory basis of assessment.

(4) With regard to the third question, the committee is of opinion that the municipality should not be asked to make any contribution to the cost of this improvement as it considers that this work is necessary for the purpose of increasing the general trading facilities of the port and that its cost should therefore be a charge on the general revenue.

(5) In view of the intimation conveyed in the colonial secretary's letter, Misc. 6333/05 of 1st August, 1905, that His Excellency has no desire to limit the committee in any way, the committee ventures to express its opinion that the revetment of the banks and the deepening of the bed of the river to its full width so as to allow boats to come in and go out at low tide and the provision of sheltered accommodation outside the river, with a view to relieving its congestion, are urgently required. It considers that these works should be treated as an integral part of any general harbor improvement scheme the government may have in contemplation and that the river works should be undertaken at once as the first instalment of any such scheme and should be paid for out of loan.

The committee has come to this conclusion by consideration of the fact that, with the deepening of each section of the river, additional accommodation will immediately become available and the existing buildings will be rendered more accessible, whereas, in the harbor reclamation scheme now under consideration the accommodation proposed for warehouses, being upon reclaimed ground, will not be available for some years even after the completion of the works.

(6) In the colonial secretary's letter, Misc. 6333/05, the committee was asked by His Excellency to indicate some additional courses of revenue to pay for these works if they decided not to recommend any assessment of the riparian properties. The committee is of opinion that this question should be considered as part and parcel of the general question relating to the provision of funds for the improvement of the port.

Signed by J. O. Anthonisz, John Anderson, A. Murray, W. H. Shelford, R. Peirce, and S. Liang Seah.

American Manufactured Goods Shipped to the Orient are Miserably Packed

Everywhere throughout the Orient commercial concerns that handle American manufactured goods are complaining vigorously against the bad and careless packing methods of the exporters in the United States. Consular agents have repeatedly warned the exporters to reform this branch of their shipping methods, through official reports on the subject to Washington, and yet the exporter persistently refuses to heed these warnings. Some mos. ago Special Agent Crist determined to give the matter searching and thorough investigation in the hope of *stirring up* the exporters to a full realization of the flagrant commercial evil they are tolerating, with the result that he sent to the Bureau of Manufacturers of the Department of Commerce and Labor, at Washington, from Tientsin, the great commercial depot of N. China, a report in which he describes at length the manner in which goods are packed in the United States, how they are received at their destination, furnishing illustrations which give emphasis to his description, and which should not fail to convince American manufacturers and exporters of their deficiencies in this particular. The report should also impress the general reader with the correctness of the charges that have so frequently been made and reiterated by American consuls and agents, and the commercial concerns of the Orient, relative to careless American methods in dealing in the markets of the Far East.

Courtesy "The Manila American"

ONE OF 100 CASES OF WATCH CHAINS WHICH ARRIVED AT THE MANILA (P. I.) CUSTOM HOUSE IN A DAMAGED CONDITION FROM THE UNITED STATES

There is probably no one thing, says Mr. Crist, in his report, to which American exporters can give their attention that would bring better returns than that of packing. As a general proposition the wood of which they construct their cases is too light in weight. Where ½″ stuff is required they will use ⅜″. If 1″ stuff will insure safe delivery English and German exporters use that thickness, while many Americans select a ¾″ or ⅞″ thickness. Two cases in point have been brought to my attention within the past few days which showed that the utmost thought, attention, and care had been expended upon the details of packing, but with an evident lack of complete understanding of the strain which breakable goods are subjected in transit to the Far Eastern market. In one instance, by a slight oversight, an automatic piano-player barely escaped complete destruction.

How Not To Pack Glass.—The first instance was that of a shipment from a western manufacturer of window glass. This lot comprised eight packages of opaque or figured window glass in wooden boxes. From the invoice there had been, apparently, 80 sheets of glass placed in flat boxes, each box containing 10 sheets. These boxes or cases were constructed of ⅜″ wood on the sides and ⅝″ in the ends. The wood was entirely too light in weight and, being of soft pine, was subject to fracture on very slight jar or strain. The sheets of glass were evidently laid in the boxes with loose hay. Hay might have been sufficient if it had been securely woven about each separate sheet of glass. Each box was then carefully wrapped in more hay and the whole encased in a gunny sack.

There was no marking upon the sacks to indicate their contents, and upon ordinary examination they appeared to contain only hay, straw, or other indestructible merchandise. The covering of hay was not thick enough to shield the sides of the boxes from blows and knocks, but thick enough to disguise the presence of the box, and having no strength to sustain weights independent of the slight support given by the fragile box it would have been far better if there had been no such covering and the boxes had been shipped bare, with the cautionary signs usual in shipments of glass or other fragile commodities. Had this been done the boxes would have been stowed in places on shipboard to insure their safety. Instead of that in all likelihood they were placed with other baled and sacked cargo, and from the appearance of the glass it was quite apparent other sacks had been placed on top of them. Under the most favorable conditions these boxes could not have withstood the weight of a single bale of piece goods, and if several thousand lbs. of flour sacks should have been loaded after the eight sacks of glass had been placed in the ship's hold the weight would have completely crushed them. At any stage of the transit these goods were liable to destruction, and it is impossible to state at what stage they were destroyed. Upon opening two of the sacks the boxes were found crushed and the contents utterly destroyed. There was not a piece of glass left larger than possibly 8″ or 9″ in length, with jagged edges, and varying from 1″ to 4″ or 5″ in its greatest width.

A "Piano-Player" Knocked Out.—The other instance to which reference is made was a "piano-player" from an eastern manufacturer. This machine was carefully and superbly packed in all save one or two details. There should have been placed inside of the piano-player case two blocks of wood, one at each end of the main horizontal piece, which appears to sustain the mechanism of the player, so as to securely support the uprights at its ends and prevent any lateral play. These uprights are of light stuff, sufficiently strong to answer the purpose for which they are meant, but entirely inadequate to withstand any unusual side wrench or strain to which every machine is liable in combined rail and ocean transit. This was one of an order for two players. One was consigned to Peking and arrived in good condition. If this ratio should hold in a larger shipment it would prove so great a financial loss as to cause a discontinuance of further orders.

The upper portion of the right side of the cover was split off entirely, and the middle section of the cover was broken in two pieces. The upright end support on the right-hand side was splintered, the cast-iron arms connecting the bellows and pedals were snapped off, all attachments which were held in place by small screws were torn loose, the small brass angles at the sides of the middle section which contains the music spindle were bent

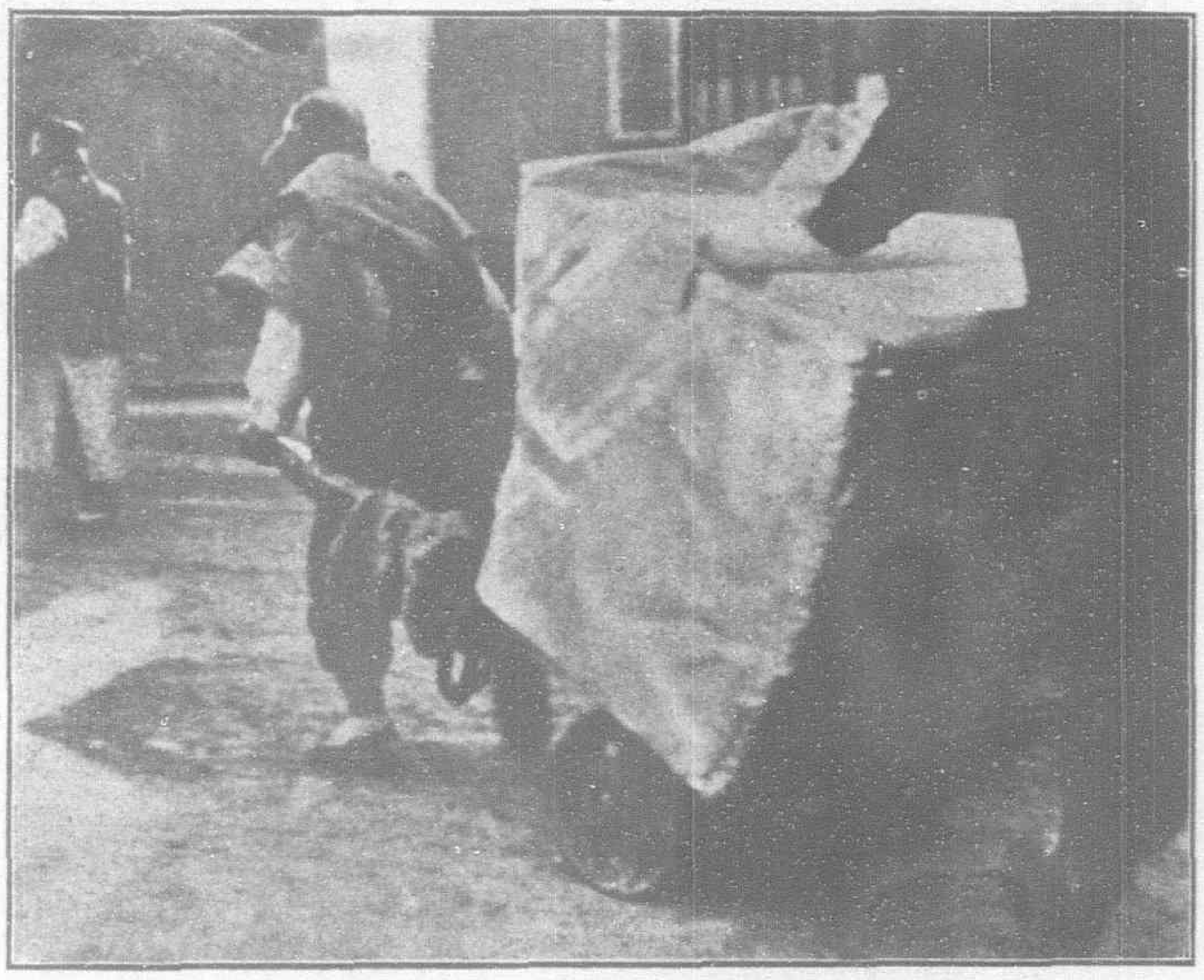


FIG. 1.—CASE GOODS. WOODEN CASES DESTROYED IN TRANSIT; TIN LINING PARTIALLY DESTROYED

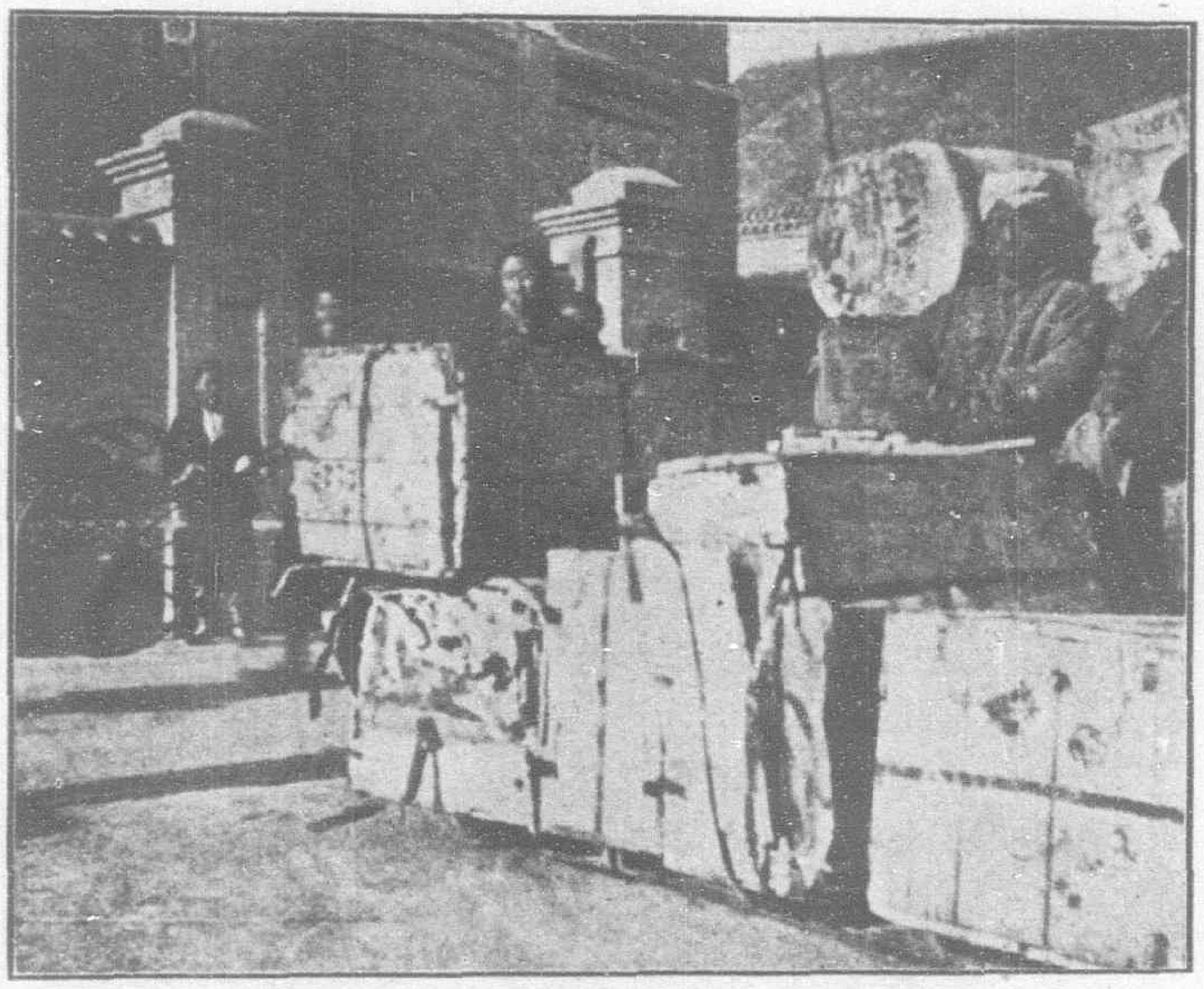


FIG. 2.—CASE GOODS, SHOWING CONDITION UPON ARRIVAL

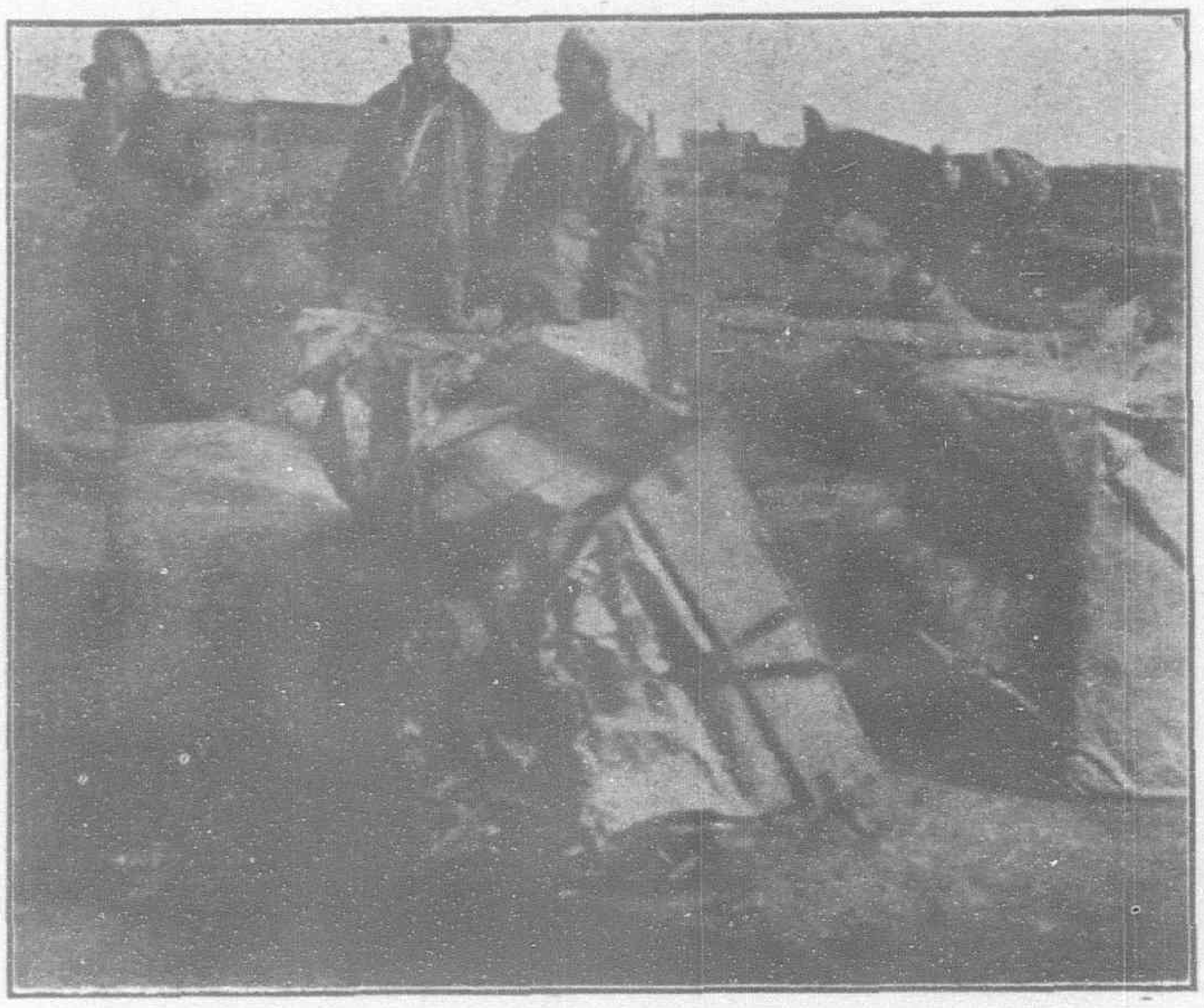


FIG. 3.—CASE GOODS CONDITION UPON ARRIVAL

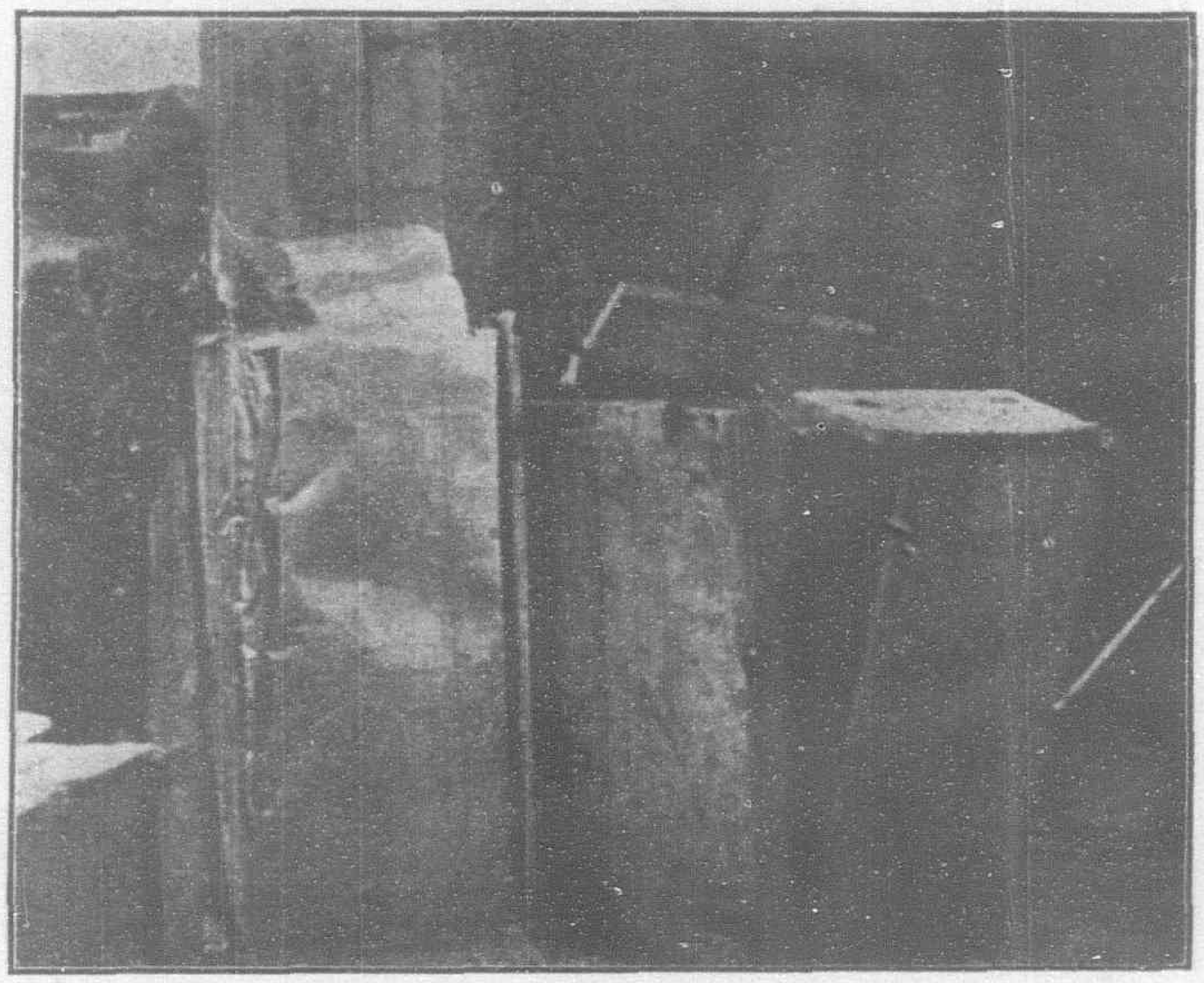


FIG. 4.—CASE GOODS CONDITION UPON ARRIVAL

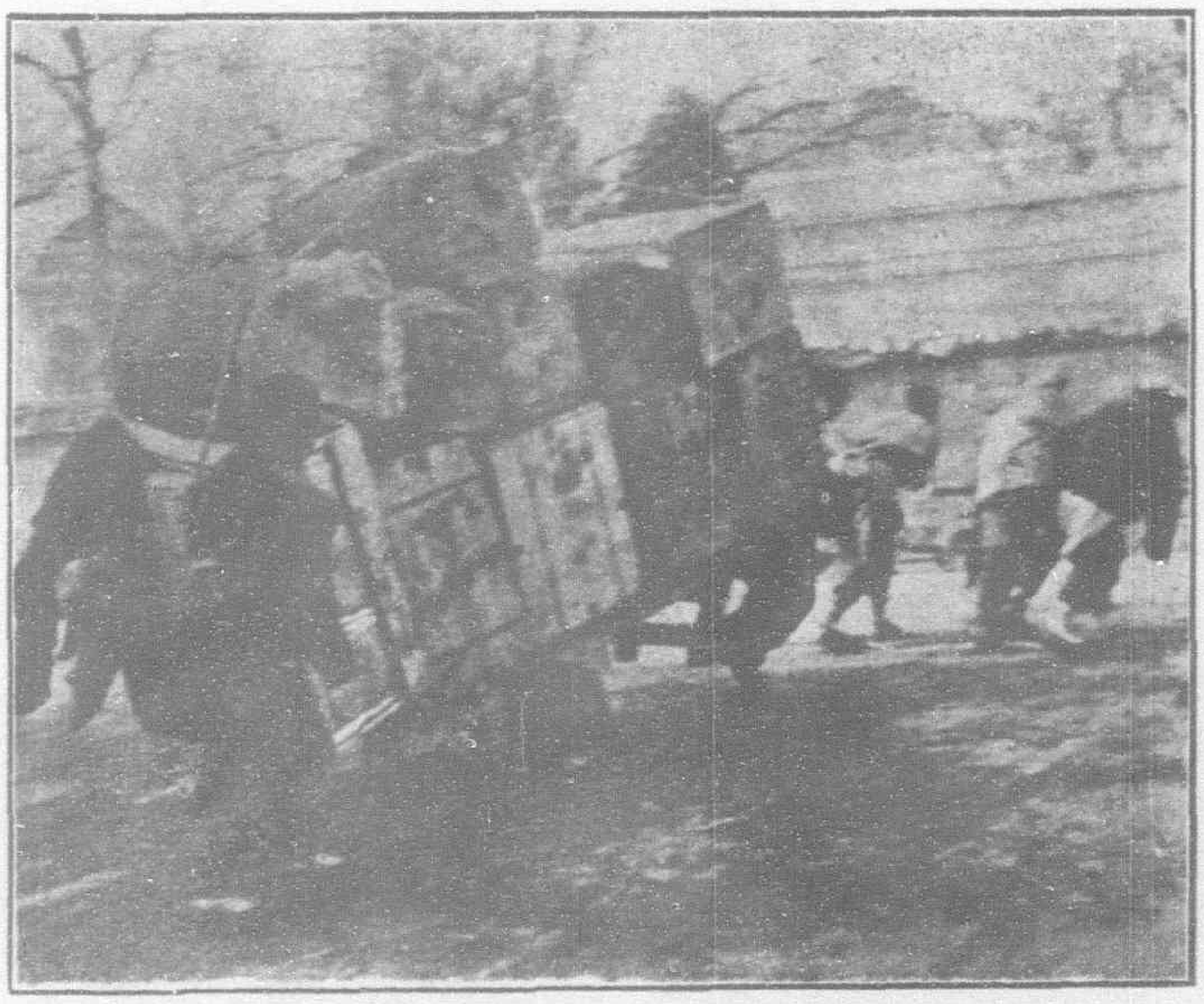


FIG. 5.—CASE GOODS AND BALES OF AMERICAN GRAYS

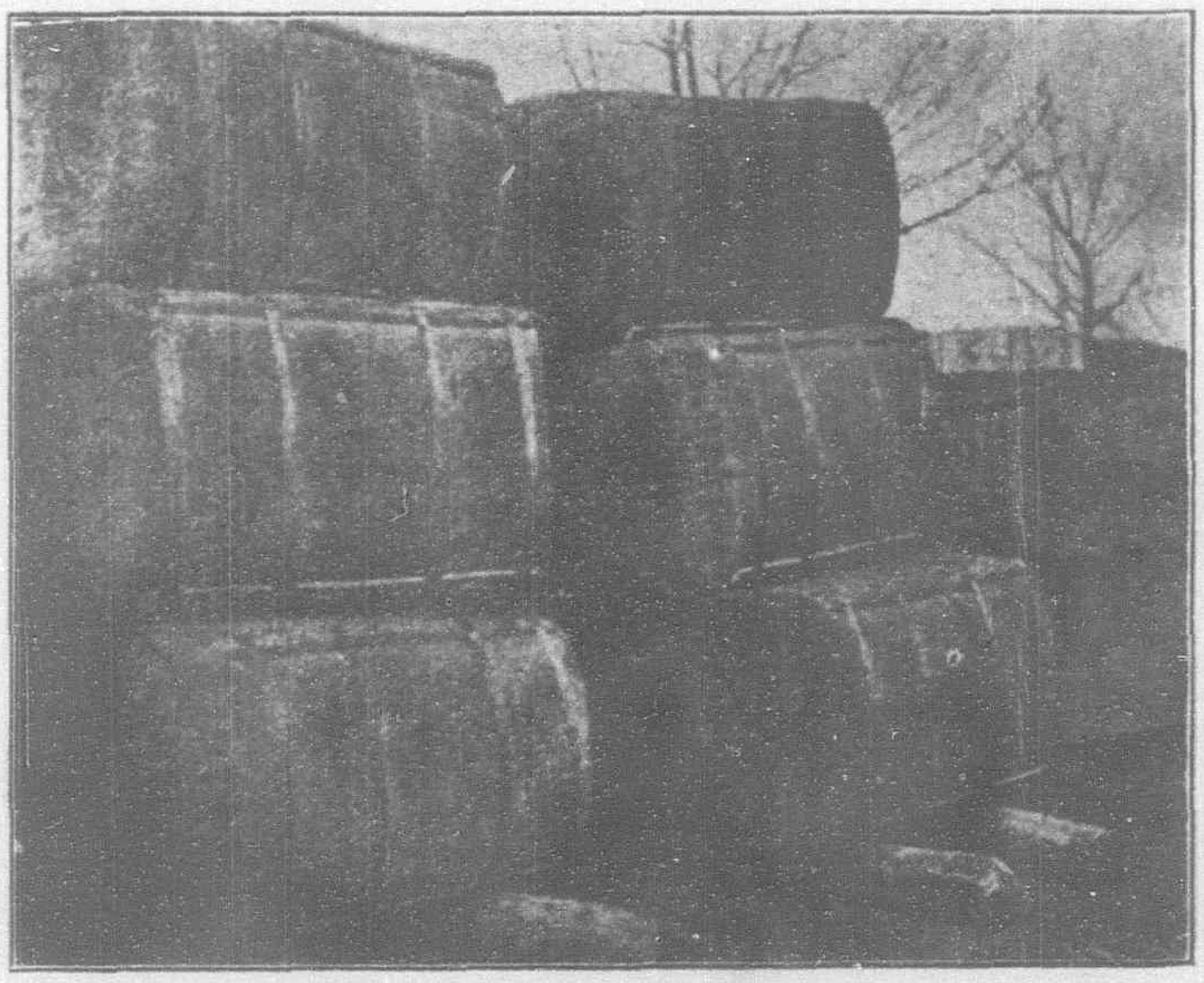


FIG. 6.—JAPANESE YARNS. CONDITION UPON ARRIVAL

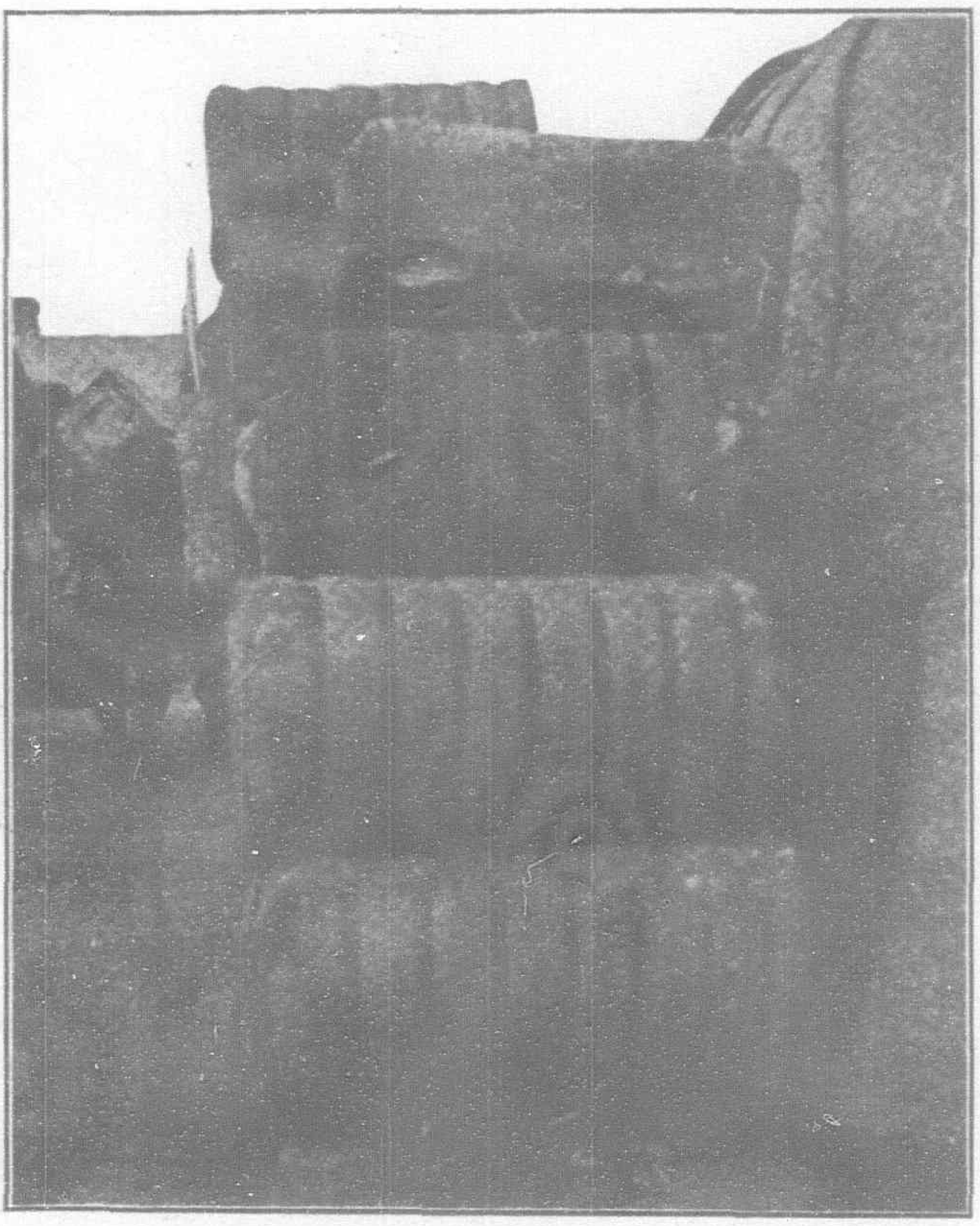


FIG. 7.—AMERICAN PIECE GOODS METAL-BOUND; ONE BALE TIED WITH ROPE

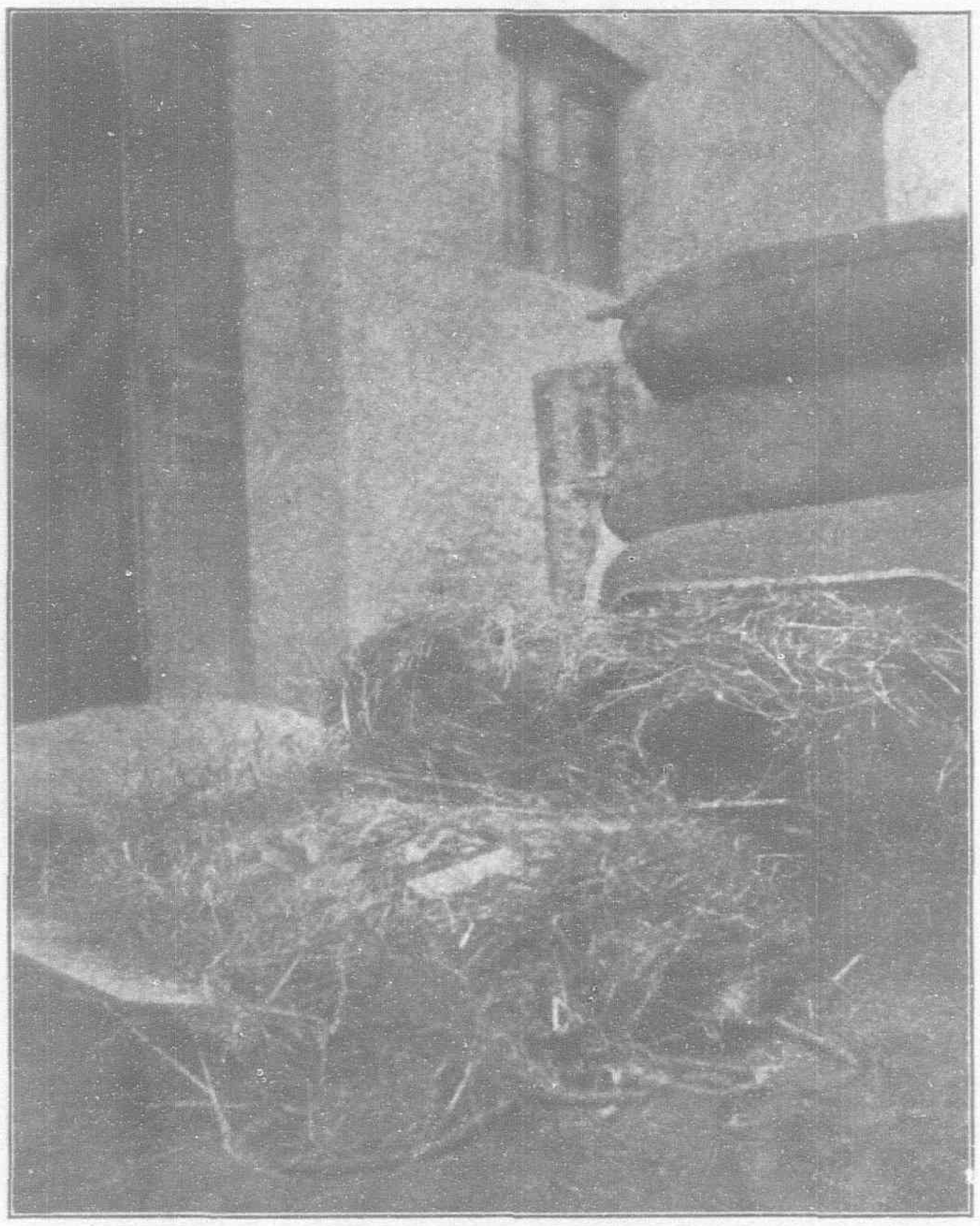


FIG. 8.—SHIPMENT OF WINDOW GLASS FROM THE UNITED STATES

and broken loose, a piece was chipped out of the flange on the right-hand end of the roller, and the iron T shaped casting was broken at the point indicated by the dotted line. This casting carries the shaft, which was badly bent, by which the roller is moved. Besides these injuries, the right-hand door was jammed back and caught upon some obstruction which dug into its surface, and the wooden guide to the hammers was broken into five or six pieces.

This situation can be avoided in the future by removing the pedals and placing them in a separately constructed compartment nailed in some suitable place inside of the packing case. To prevent lateral motion of the mechanical parts two blocks of wood could be properly fitted snugly into the spaces between the casing and the upright supports to the cross piece carrying the operating parts of the player.

PACKING OF HABERDASHERY. — English underwear, haberdashery, and miscellaneous articles of clothing are packed for shipment in boxes or cases of ⅞" stuff, having tin linings made to the exact inside measurement of the box. Inside of the tin lining heavy wrapping paper is placed, in which are packed the bundles of different articles. These articles are wrapped in attractive paper packages or in pasteboard boxes containing ½ doz. each of such articles as hosiery, gloves, etc. Each package is properly marked, giving clearly and plainly the number, size, and name of the contents.

Cases containing an assortment of different articles have the different kinds packed in boxes having distinctive color marking, as white, blue, green, black, red, denoting socks, stockings, and underwear of different qualities, or they may be distinguished by being decorated with cheap but attractive lithographs. This facilitates the examination by the customs officials. An examination of one case of goods packed in this manner is sufficient to pass the entire shipment. When the case is packed by the exporter at the point of shipment, the top of the tin lining is securely soldered, so as to be water-tight. That this is a most necessary precaution in all shipments other than gray goods is evident upon examination of shipments of goods arriving daily with their battered and crushed cases. In many instances only the tin case is left intact upon

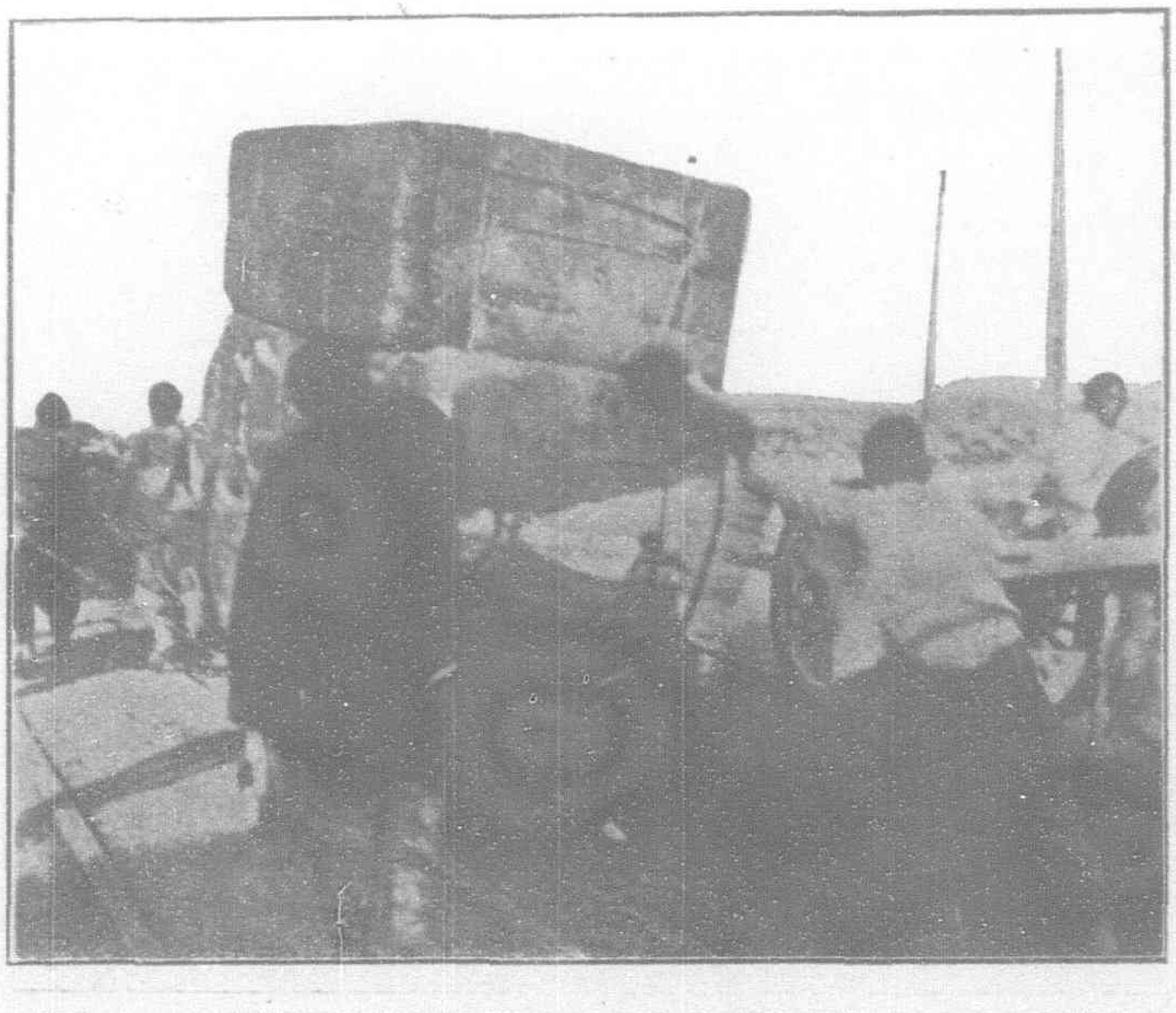


FIG. 9.—AMERICAN PIECE GOODS AND NATIVE GOODS EN ROUTE TO THE CHINESE OWNER

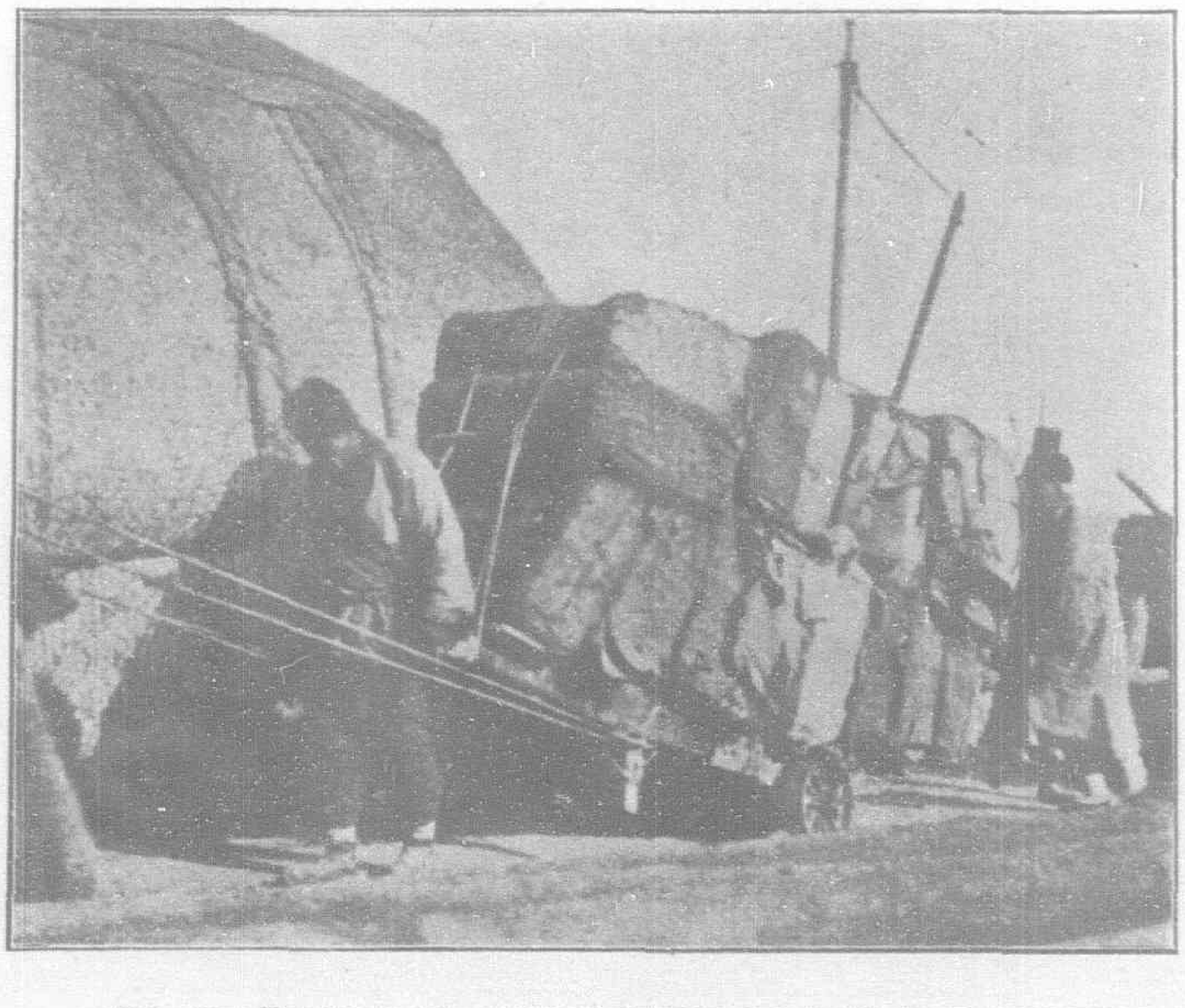


FIG. 10—TRUSSES OF AMERICAN PIECE GOODS IN DAMAGED CONDITION

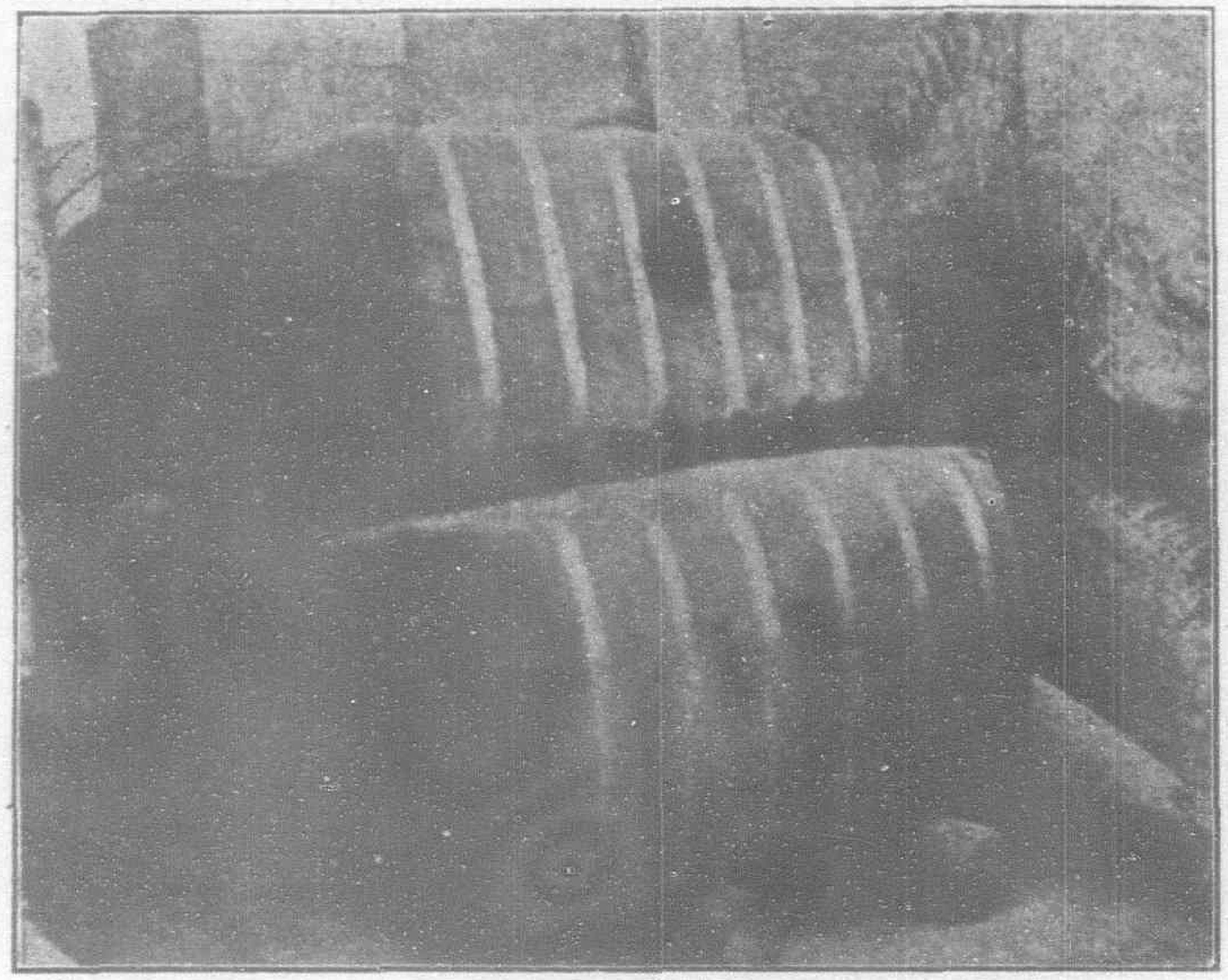


FIG. 11.—BALES OF PIECE GOODS FROM HOLLAND

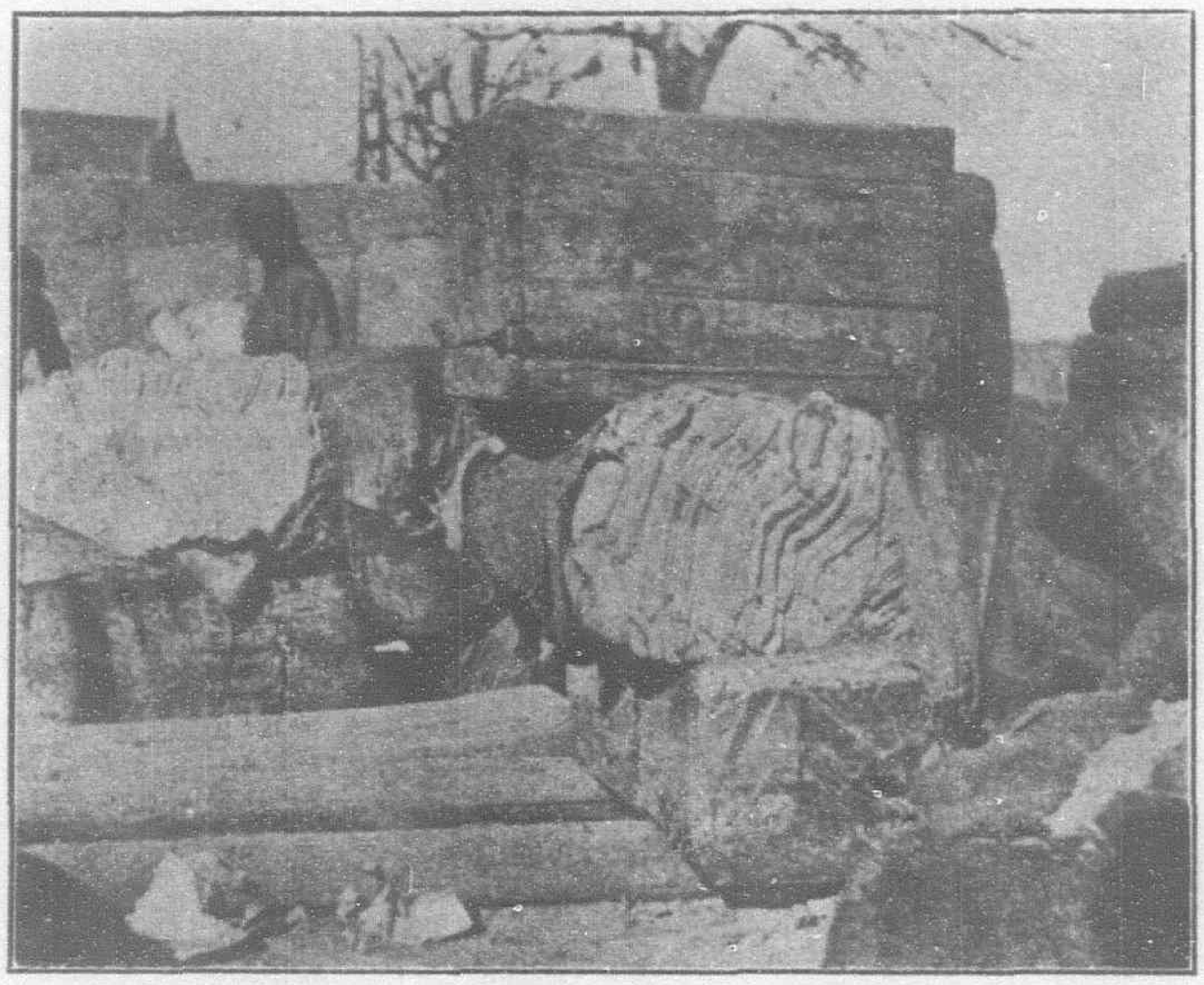


FIG. 12.—PIECE GOODS. BENEATH PIECE GOODS ONE CASE OF GOODS WITH ONLY TIN LINING REMAINING

arrival, and this is frequently so damaged as to expose the goods to the elements. The most careful packing is not always able to withstand the rough treatment given by the coolies who load and discharge the cargoes at these ports.

ILLUSTRATIONS OF BAD PACKING.—These pictures are not exceptional samples, but are of cases which had evidently been made and the goods packed by men deemed competent for the work. They happened to receive a greater portion of smashing, tumbling, and crashing than the others of the same kind containing like goods, and as a result succumbed in the degree shown by the photographs.

No. 1 present a view of the tin-lined case partially destroyed and the only remaining protection to the contents. The wooden outer case was destroyed in transit.

Nos. 2 to *5* show the damaged condition in which many wooden tin-lined cases arrive in Far Eastern ports. All of the photographs were taken before the goods had been received by their purchasers and presented this appearance before passing through the final one or two handlings to which they are still to be subjected.

The addresses upon bales and boxes arriving from Europe and England are in large bold-faced type, and the cases seldom exceed 5′ in length or breadth. The boxes are bound with heavy strap-iron binding on their edges, while the ends are doubly supported by cleats with short strap irons fastened to the ends and running over the edges to the sides. The iron straps on packages arriving from America in many instances appear to have seen service in previous shipments. This increases the liability to breakage and the practice is to be deprecated. The German method of packing goods similar to those above alluded to differs from the English only in that they use oiled-paper lining to the tin box instead of plain paper.

The illustrations *Nos. 6* to *12*, inclusive, indicate the condition of various goods from different countries upon their arrival at Tientsin. These pictures were taken as the bales were seen upon the customs landing, and are in each instance described to illustrate a particular point or comparison.

No. 6. Japanese yarns in bales of 400 lbs. net. The markings upon these bales always show up clear and distinct, both in Chinese characters and in English. The iron straps are heavy and broad and the angles of the bales are supported by stout boards or sections of bamboo poles, giving greater protection to the contents in transit. Bales thus prepared are not often broken, the percentage being quite small.

No. 7. American bales of piece goods, bound by metal bands, which arrived in good condition with but slight abrasion or tearing, and a rope bound bale with but two ropes remaining out of the original nine. This bale arrived at its destination without further damage, but the goods were in an unprotected state and required careful handling.

No. 8. Shipment of window glass from the United States.

No. 9. American piece goods *en route* to the godown of the Chinese purchaser, showing method of trucking and the large loads hauled by Chinese Coolies.

No. 10. There are eight trusses of goods in a more or less dilapidated condition. This is a typical load, illustrating the average condition of the American truss. In almost every instance the ropes have all been removed, and if three of the iron straps remain which bind the two bales that is looked upon as a favorable shipment.

No. 11. Bales of piece goods arriving from Holland. The heavy iron straps insure in most instances arrival in good condition.

No. 12. This illustration shows indiscriminate piling together of bales and cases in a more or less damaged condition. The wooden case on the bale of piece goods is slightly damaged, but as it contained a tin lining little if any damage resulted to the contents. The condition of the bales of piece goods is too apparent to need comment. The bottom package of the three in the foreground was a case of white goods, the wooden case entirely gone and the tin lining which remained was broken open on the upper angle of the end. The goods were much soiled when the photograph was taken.

At the time of the exposure The Bund at Tientsin was literally strewn with damaged bales of American piece goods. There must have been at the lowest estimate 500 in the immediate range of vision and the greater part were torn, soiled, and in bad shape generally. Those in the best condition were bound with iron straps, while the rope-tied bales suffered the most.

JAPAN'S FUTURE PLANS

The joint efforts of the chambers of commerce of Japan to inaugurate a system, which, if adopted, will secure industrial and commercial success, seems to be broad in their scope. The following items are a gist of resolutions passed by a body made up of representatives of the empire's commercial organizations, the first set in the series dealing with foreign trade:—

Matters Relating to Foreign Trade.—*(1)* Extending and completing works on customhouses, and improvement of treaty ports; *(2)* establishment of commercial and industrial commissioners' offices in the most important foreign ports; *(3)* improvements in and extension of consular service urged; *(4)* improvements in the present method of sending trade industrial students abroad urged; *(5)* to establish the service of cruising floating museum, and commercial museum, and bazaars of sample halls at the important foreign ports most likely to be Japan's new customers; *(6)* to abolish the conventional tariff; *(7)* to make customs alliance with Korea; *(8)* early conclusion of a better commercial treaty than the previous one with Russia; *(9)* lowering the import duty on raw materials.

Matters Relating to Manufacturing Industry.—*(1)* Encouragement on the part of the government to manufacturing industry by subsidy of by protective policy; *(2)* to expand the industrial laboratory and to encourage the establishment of model factories, and to give subsidy to such established factories; *(3)* to establish more schools of technology and of commerce, and to encourage the establishment of apprentice schools, and to give subsidy to same; *(4)* to open a world's fair.

Matters Relating to Transportation.—*(1)* To build more railways, and to complete the already planned lines immediately; *(2)* to increase steamship lines with government subsidy; *(3)* to complete works connecting the sea and land transportation to give better facilities; *(4)* to control all the railroads of the empire as to their business methods, etc.; *(5)* to better (lower) both the railway and marine freight rates; *(6)* to expand the present telephone service.

Matters Relating to Finance and General Economics.—*(1)* To economize the administrative expenditures; *(2)* to adjust the taxation: *(a)* either to abolish or lower war taxes injurious to trade or manufacturing prosperity, such as stamp duty on checks, import duty on rice, cocoons, consumption tax on fabrics; *(b)* government monopolies, such as tobacco, salt, camphor, are desirable neither as a government resource nor as bettering the industry. Salt monopoly, first of all, should be abolished as soon as some other resource is found; there sould be no other government monopoly; *(3)* redemption and consolidation of public land; *(4)* to give every possible caution to check the overflow of circulating currency; *(5)* to better the money market; *(6)* to consolidate the banking houses of the empire; *(7)* immediate establishment of Japanese-Chinese Bank.

SHANGHAI'S ELECTRIC TRAMWAY SYSTEM

At the statutory meeting of the Shanghai Electric Construction Company, Ltd., held recently at the office of Messrs. Dent Bros. & Co., Gracechurch-st, London, Sir Alfred Dent, K. C. M. G., presided. The company, which has been formed to carry out the contract made by the Municipality of Shanghai for the construction of electric tramways, it would appear from the proceedings, has lost no time since it was registered in getting down to business. At this meeting a very encouraging account of what has been done in the short time at disposal was given by the chairman, an old resident of Shanghai, and one who is acquainted with the situation there. In his address to the shareholders Sir Alfred said:—

> The Municipal Council and ratepayers of Shanghai having come to the conclusion some years ago that tramways had become a necessity for the place, tenders for a system were advertised for to be sent in by March 31st last. Messrs. Bruce, Peebles & Co. were successful in the tender and in obtaining the contract. You will bear in mind, therefore, that this company has been started not as a speculation, but to carry out the requirements of the Municipal Government of Shanghai. In this statutory report there are, of course, no accounts to lay before you, except the statement of the number of shares allotted, the cash received, and an abstract of receipts and payments on capital account to date all of which are given in the statement, which has been circulated amongst you. The charges are the usual charges—underwriting, brokerage, etc.—that are usual and inevitable in enterprises of this nature. The amount of share capital so far received, you will have noticed, is £63,400. Of that, £25.000 have been paid to the contractors. There is also a loan of £5,000 to the contractors, which may possibly call for some explanation. It refers to the deposit which they had to make on signing the agreement with the council at Shanghai on October 10th last. The contractors claimed that this deposit should have been paid by the company on taking over the concession; but eventually it was arranged that we would find the money in the form of a loan to Messrs. Bruce, Peebles & Co. It lies with the Hongkong and Shanghai Bank, bearing interest, and will, of course, be returned to us on the completion of the contract. There are other items as detailed, of £1,000, £15,900, £1,953, £2,500, and £2,100, which are all payments in accordance with the agreements and the prospectus. Though two agreements with the Shanghai council were signed in Shanghai on October 10th, they did not arrive in London until December. The contractors, however, anticipating the receipt and contents of these agreements had already made considerable contracts in reference thereto. The greater portion of the rails have been shipped, and have already arrived in Shanghai. Contracts have been entered into in Australia for necessary wood pavement, and further shipments are being made of poles, tools, and other necessaries. You will therefore understand that no time has been lost as far as the contractors are concerned in getting the work in hand as rapidly as possible. The council has to reconstruct the Garden Bridge over the Soochow Creek, and to strengthen other bridges elsewhere; it has also to provide additional motors and machinery to supply the power we shall require, and we hope it will be ready with its additional plant and bridges in good time.
>
> As to the probable success of tramways in Shanghai I would observe that most of your directors have an intimate knowledge of the place, and that many present residents and old residents have taken shares, and I may say that we are all very confident that the company will prove a great success owing to the facilities for construction and working and to the large and industrious population that is concentrated in Shanghai, We depend largely on the Chinese for our revenue, the people who form the great bulk of the population, and it is very satisfactory to us to read so constantly in the newspapers how the Chinese flock to railways wherever they have been introduced, and we anticipate that our tramways will have a similar attraction for them. The streets in Shanghai are narrow in many places, which necessitate small cars and a narrow gauge. Our cars are, in fact, under the agreement with the council, built to carry only 32 passengers These narrow streets will, I think, be of one advantage to our company, and that is they are wholly unadaptable for competition by motor buses.
>
> Negotiations have been under consideration for some time past to extend the tramways into the French Concession, and Chinese City and native quarter. These, however, are temporarily suspended as far as the Chinese quarter is concerned. The Taotai of Shanghai has lately been much absorbed in other matters which have led to a quasi riot, over what is known as the Mixed Court affair. These disturbances seem now to have been settled, the China Association having recently received a letter from the Foreign Office dated February 6th, which concludes with the following paragraph:—"The arrangement arrived at by the consular body appears to Sir Edward Grey to be entirely satisfactory." You will notice in the papers, especially from America, that there had been rather unfavorable telegrams referring to China, and no doubt a good deal of friction is going on over the boycott of American goods, and this extends throughout China, including Singapore and Hongkong. Shanghai is not more affected that any other part in China, and I do not anticipate any disturbance there that cannot be easily dealt with. The population of Shanghai is largely made up of business men, both Chinese and foreigners, and it does not suit business men, whether Chinese or foreigners, to have disturbances. I asked the contractors to give me some particulars as to how they viewed the position and progress of the works, and Mr. Portheim has written me as follows:—"Approximately £60,000 worth of plant has been shipped, although the company has only gone to allotment 6 weeks ago. The ground has been broken in Shanghai, the contractors' engineers have all arrived, and are busy organizing the various gangs of workmen preparatory to handling the material which has just arrived at the wharf. We anticipate, therefore, no difficulty in completing the actual tramway construction in 12 mos. from date, and the service should be running in about this period if the municipality hurry up and attend to its portion of the work."

Messrs. Harper Bros. & Co.'s report, alluded to by the chairman, states that the contractors have made very quick headway with the preparation of their plant for this work. The contract for the construction was signed on December 11th, 1905, and on November 23d, the first shipment of rails took place for Shanghai. The whole of the cables is well in hand and nearly all of the poles have been constructed. The urgency of persuading the Shanghai Corporation to take active steps towards the construction of the two bridges was pointed out, and it was also noted that tenders have been called for for the increase of the Shanghai power-house, so that there should be no delay in receiving power from that station.

PHILIPPINE RAILWAYS

Commissioner W. Cameron Forbes, Secretary of Commerce and Police, has been quoted as saying that the construction of the railroads on the Islands of Panay, Negros, and Cebu will, in all probability, begin simultaneously. Government engineers have made a careful survey of the Island of Panay from Iloilo to Surpen, and the probabilities are that this survey will be adopted by Messrs. J. G. White & Co, who are to build these lines, as the route of the railway on Panay. The exact location for the lines on the other islands can not be definitely announced until after the contracting firm's engineers have made their survey.

Much of the future success of these lines will depend upon the routes along which they will be established. Those who are directly concerned say that the Danao River, near Escalante, Negros, presents possibilities of harbor development which would make it one of the finest ports in the archipelago. All that is necessary is the dredging of a small bar or the blasting out of a small coral reef. The railway will, in all probability, run for 10 to 20 ms. inland, from this point, following, in general, the shore, first to the N. and then to the SW. It is not known at this time whether the line will touch Bacolod, as there is no harbor there, but it is likely that it will reach some deep-water harbor at the SW. terminus, which will be located somewhere near San Juan de Ilog of Himamailan.

This line will not begin to develop the ultimate resources of Negros. The largest body of the island is at the SW. end, which will be untouched by the proposed line, as will also be the case with reference to the great fertile slopes of the SE. coast which lies facing the Island of Cebu. It is hoped, however, that eventually the road will extend, following the same general plan along the coast, and that a branch will cross the island making the Harbor of Bais its final terminus.

Cebu is probably the most densely populated island of its size in the archipelago. Its railway will run up and down and probably close to the coast. The route will be so surveyed that the capital of the province, the Pueblo of Cebu, will be close to the center of the line. It is likely that construction will begin at Cebu because of that town's fine harbor facilities, and be pushed rapidly in both directions—NE. and SW.—until it reached Danao or Carmen on the N., and Argao on the S.

The proposed lines across, or traversing the islands E. and W., are optional with the contractors, and probably will not be built immediately, although it is thought highly desirable that ultimately all these lines will connect the E. W. coasts of the three islands, as the change of monsoons makes material communications along one of the coasts very difficult for small coastwise vessels during one-half of the year. Hence, the ability to cross the islands by train should prove a great and general factor in the development of the country. This is particularly true in the case of the Island of Luzon. The great problem of Panay will be the N. terminus. The specifications call for two lines—one to Capiz, where the population is centered, and one to Bataan, where there is the best opportunity for a harbor. Until the surveys are made of the latter branches, however, it will be impossible to predict the engineering difficulties that may be encountered.

Another very interesting feature of this railway construction problem is the question of a desirable route across the Island of Luzon from some desirable Pacific Ocean point to Mabila. Commissioner Forbes, accompanied by General Manager Higgins of the Manila Railway Company, Ltd., and others, has just made a trip to the E. coast of Luzon in search of a desirable Pacific Coast harbor and to study the country with a view to connecting the prospective harbor with Manila by the shortest and most available railroad route. The party went to Taytay over the Antipolo extension of the Manila & Dagupan Railway and from there by launch to Sinaloan, a port on the NE. coast of Laguna de Bay. From there it proceeded overland to Binangonan, a point almost directly E. of Sinaloan and opposite the Island of Polillo. At Binangonan the party was joined by Colonel Fisk, C. E., U. S. Army, in charge of the insular Bureau of Port Works, and crossed over to the Island of Polillo where the large coal deposits were investigated. Then the coast was explored with a view to harbor facilities. The distance between Binangonan and Manila, as the crow flies, is about 50 ms.; around by the San Bernardino Straits, it is about 600 ms. The apparent intention of the government is to locate the Pacific Coast terminus of the line as close to the Polillo coal deposits as possible with a view to the more rapid development of the mines.

Taken altogether the preliminaries of railroad construction are going ahead apace, a condition which is most satisfactory to everybody who are desirous of industrial development.

MISFORTUNE TO A GREAT MINE

The Champion Reef Gold Mining Company of India, says *St. James's*, has for some time past taken the premier place amongst the mines working in the Kolar District of Mysore. For years it has crushed nearly 20,000 tons per month, and the gold produced has reached nearly £70,000 per month. Dividends have recently ruled steadily over 100 per cent., attaining as much as 165 per cent., and under the influence of these mounting distributions the price of the shares rose rapidly in the market. Twice did the directors split them, first into 10*s.* shares and then into 2*s.* 6*d.* shares, in order to make them less awkward to deal in, and the result has been that the £260,000 of capital has been converted into 2,080,000 shares of 2*s.* 6*d.* each, and so favorably was the mine considered that at one time these 2*s.* 6*d.* shares were quoted 35*s.* each, representing capitalization of £3,640,000. With such an excellent record behind it, considerable regret was expressed at the fact that the directors have had to issue a circular announcing that the ore opened up in the mine recently not having been so rich as that developed of late, they have decided to curtail the quantity of ore sent to the mills by about 3,000 tons a month. This is, rougly speaking, ⅙ of the average output, and presumably the returns will diminish to this extent, while the profits may suffer still more.

RAILWAY PROBLEMS IN MANCHURIA

It is evident from accounts received from Manchuria, says a Peking letter, that Japan will have to spend much money on railway betterments before her principal holding is of much value. The first great question, naturally, is whether the Japanese will change the narrow 3'-6" gauge to the 4'-8½" standard gauge. If they make this change, in addition to all their other expenses they will have to invest at least £1,000,000 in providing entirely new rolling-stock to replace that which they borrowed from their own railways in Japan. I am very sceptical about this being done, because there are a number of other very heavy outlays which will have to be at once entered into.

The first of these, and one of the most expensive, is the replacing the embankments, bridges, culverts and rails between Changtu and Kungchuling. The Russians utilized the ample time given them by the slow Japanese advance to rip up a 50 m. gap on the railway and to carry all the rails and steel work far back into their own bases. It is this gap beyond the Japanese front which will have to be mended at Japanese expense. From a £250,000 to £500,000 will be necessary for this.

The second expense is the repairing and re-building of stations, and the repairing and improvement of the godowns and railway property. This, if carried out along the whole 450-ms. of the main line, will necessitate the disbursement of another £500,000.

The third expense is the completion and improvement of Dalny, which must be attended to, since unless this Russian failure can be turned into a Japanese success within 2 or 3 yrs., it will be a white elephant in the government's hands. This expense then must be entered into without delay. The most conservative estimates hold that another £500,000 will have to be put into Dalny at once, and a further £500,000 expended slowly during the next 5 or 6 yrs.

The fourth expense is the development of the railway coal mines. There are three of these mines: The Fushun, the Yentai, and Wafangtien. Of these three, under the Russian regime the second mine, the Yentai, was the biggest producer, but the Japanese have already shown a strong inclination to push the Fushun mine and to look after the other two very slightly. If they develop the three simultaneously in order to make coal one of the great articles of freight, a further £500,000 will have to be sunk in machinery and installation of improved appliances.

Thus making the trunk-line a standard-line; completing the gap made in the N.; repairing and rebuilding stations and railway properly, modernizing the Port of Dalny, and developing the coal mines and giving them improved appliances and rolling-stock, will absorb a sum which may vary from £2,000,000 to £4,000,000, according to the thoroughness with which railway affairs are attended to. With all this additional money sunk in Southern Manchuria the Japanese Government wlll have to strain every nerve to make the railway a paying proposition. How will it act?

There can be no doubt that large quantities of coal will be moved down the line regularly, as soon as the evacuation is complete, and that the export of coal from Dalny will be attempted on a very large scale during the winter months. The Fushun mine is at present producing 1,000 tons of coal a day. It is not too much to expect that the various coal mines will be placing 3.000 or 4,000 tons of coal at the pit-heap a day, in less than a year's time, and that half of this amount will be available for export. It is quite certain that Dalny will be the principal shipping point, and that coal will flow from here all over the N. Far East. This will be one source of profit.

The large number of trucks which will be constantly entering Dalny will be able to allow return freight of a coarse kind to travel back to the vicinity of Moukden for next to nothing; and therefore people must be prepared to see the Japanese Government offering the very greatest inducements to its subjects to settle in Dalny, and from there to conduct the import trade of Manchuria to the detriment of Newchwang.

Then it must be remembered that at Ta Shih-chiao, Liaoyang, Moukden, Tiehling, Kaiyuan, and Changtu, the government will be able to lease to its own people the immense military godowns constructed by both the Russians and the Japanese—places which can be turned into excellent depots for the collection of Manchuria's raw products and the shipment to the seaboard. All this will be in purely Japanese hands and, *pace* the cry of the open door, no others but Japanese need apply for floor space. Japanese banks established at all these centers will give the best possible facilities to their own people; and therefore, with godown-room, financing and goods-carriage in her own hands, Japan will attempt to create one of those hide-bound monopolies which a study of her present condition shows that she dearly loves.

That, of course, is only one side of the picture; for it remains to be seen how much the competition of the purely Chinese railway' on the other side of the Liao River, will tend to diminish the profits of this subtle speculation.

ELECTRIFICATION OF SINGAPORE

When the presently existing scheme of electric tramways for Singapore was first mooted, says *The Straits Times*, one of the factors which led the Municipality to receive the project with favor was that it would give them opportunity to secure for the city a supply of electric light without going to the expense of laying down an independent installation. The cry for *more light* had for long been ringing in their ears. Citizens clamored that the lighting facilities of Singapore should be up-to-date and progressive like those of other cities in the East. The coming of the electric tramways brought relief. Stipulations were made that the tramway company should supply electric current from their power station in McKenzie rd. at a stated price for public and domestic purposes, the price so stipulated being 18 c. per unit up to a limit of 500,000 units with a reduction of 25 per cent in cases where the energy is required for motive purposes.

Simultaneously, therefore, with the work of constructing the electric tramway company, the municipality has been engaged in laying a system of mains for street and domestic lighting all over the town. The first intimation that the public got that it was nearing a realization of this much-needed addition to the lighting facilities, was on the occasion of the last birthday ball, held in the newly-completed Victoria Memorial Hall, which was lit up by electricity supplied through the municipal sub-station, adjoining the Adelphi Hotel. At that time the system was by no means in a complete state of preparation, but by dint of special effort it was made to serve, and it did credit to both Mr. J. H. Mackail, municipal electrical engineer, and to Messrs. Howarth Erskine, who put in the installation. Since that period continual progress has been made in perfecting the supply system, and on Tuesday night the first real and practical supply of electric current for private consumption was turned on. There was no ostentatious ceremonial about its inauguration. Indeed, the event might have been looked upon as insignificant were it not for the fact that it marks a very important epoch in the municipal progress of Singapore.

Excellent Results Obtained.—At the municipal sub-station in Coleman-st. is placed the delicate apparatus which receives the current from the power station and distributes it according to voltage required all over the town. The machinery has been erected under the supervision of Mr. Mackail, and is of the most modern description. Its running trials on Tuesday gave excellent results. One of the buildings among the first to be lighted up was the Waverly Hotel in Hill-st. which looked very well indeed under the brilliancy of the lamp. Here the installation was put in by Messrs. Howarth Erskine. Another place which first got a supply of current for practical purposes was the palatial residence of Towkay Seah Peck Seah. Here the installation is by Messrs. J. Bertram Kinsey and it includes fans as well as lights all over the mansion. The results obtained here were also excellent.

In a very little time we should see a vast extension in the use of electric lighting in Singapore now that the municipal mains are available, and before long the completion of the street lighting may be looked for. Singapore Club installation is all but ready, and the Adelphi Hotel and other central buildings will soon be using this modern illumination. There is a feeling among a good many that the rates charged by the Municipality are too high; but this matter will no doubt right itself in time, and we believe that a reduction in prices is already contemplated.

Apropos of electric lighting, we learn that Messrs. Howarth Erskine have secured the tender for putting down the installation in the Penang town hall and theater.

CHINESE LABOR FOR PANAMA

Vernacular papers of China say that Minister Rockhill has communicated to the Wai Wu Pu, at Peking, a proposal of the Panama Canal Commission to engage coolie laborers from China for the Panama Canal construction. The terms of the contract for these laborers will, it is stated, be similar to those for the recruits to the Transvaal, and the admission of the coolies will not be effected by the exclusion laws of the United States. The Chinese authorities are requested to make this information generally known so as to preclude the possibility of obstruction to such emigration. This request the board has accordingly communicated to the viceroys of Chihli and Kiangsu provinces.

NORTHERN MANCHURIA

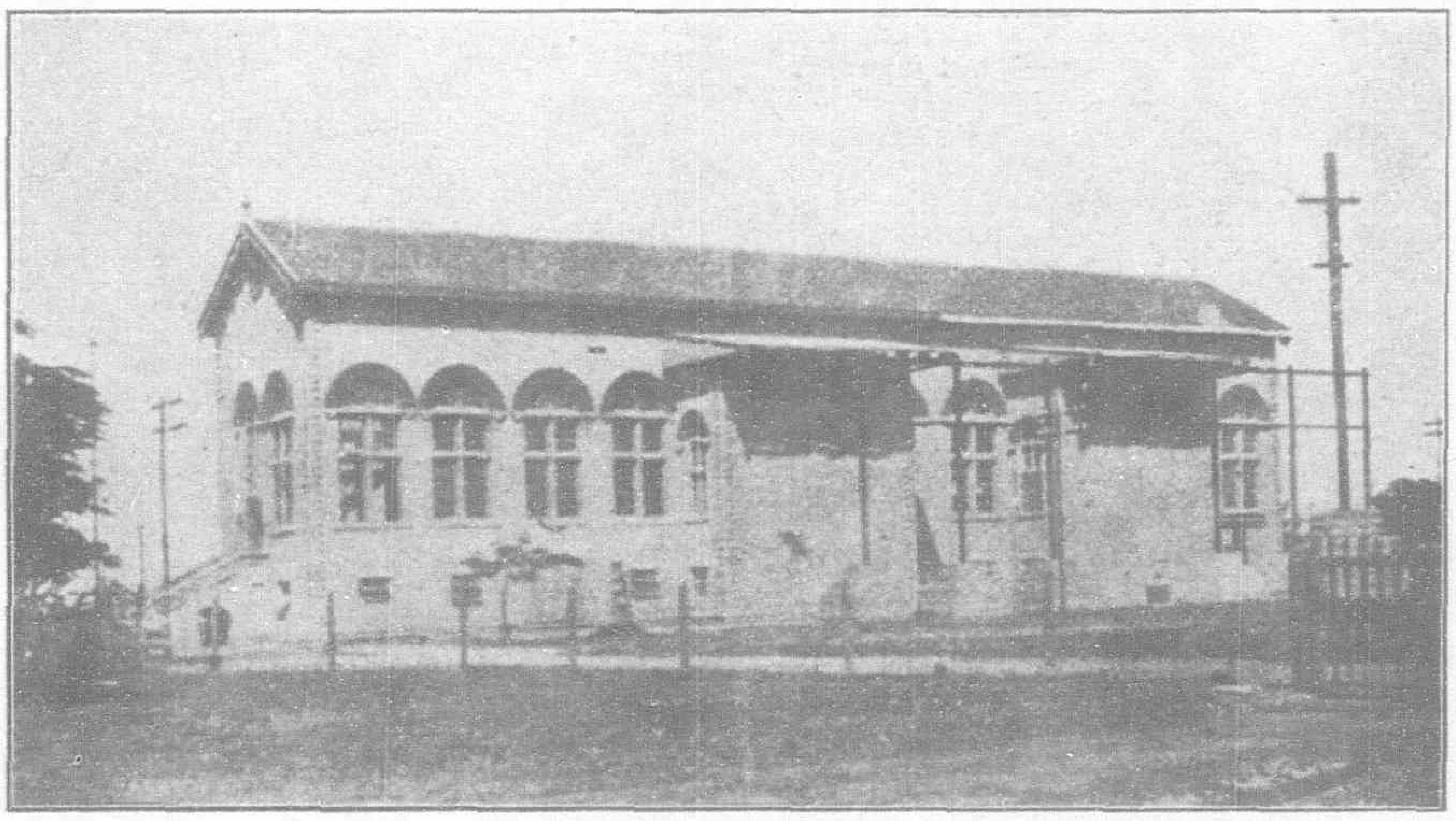
The so-called Chinese mines of N. Manchuria, says the *China Review*, about which there is some talk, would probably neither be rated as mines by English engineers, nor pronounced by them paying propositions. They are all placer mines, that is, alluvial deposits which have been worked over for many years past by hand, and which could not be exploited profitably with the aid of modern machinery. In every case where the deposit is a rich one, the Chinese authorities have practically worked out the best land. Thus the Moho mine, about which there is most talk, has been worked without a break for nearly 20 yrs. by the Chinese, until the gold production has sunk to a very small amount indeed. Formerly it may have been possible to take £500,000 sterling of precious metal from these washings; to-day, if Chinese information is to be believed 1/10 of that sum cannot be extracted annually. The idea, then, that Russia desires to annex riches as fabulous as those of Golconda is merely fantastic.

And in timber-felling as in mining. The building of the Manchurian Railway has allowed the mountains covered with virgin forests (which are interposed between the Sungari plains and the Primorsk) to be eaten into. But the supply of timber in these northerly latitudes is practically inexhaustible, and the value which wood has in settled countries does not exist here. Placed many hundreds of miles away from any sea-board, with the scantiest population living near, these Manchurian forests internationally cannot have the same value as, for instance, the Yalu forests, whose trees are carried by water to the sea. A timber-felling concession is intrinsically of small value therefore in the Kiria Heilunchiang provinces. Russia has as much timber along the Amur as she will be able to cut for hundreds of years, and Manchurian supplies can be merely useful for local work.

LARGEST HYDROELECTRIC INSTALLATION IN SOUTHERN ASIA, MYSORE PROVINCE, INDIA—III

(By A. C. HOBBLE.)

The standard line construction makes use of composite poles consisting of a heavy 7″ wrought-iron socket 13″ long with a 7×7″ Australian jarrahwood top which is 17′ in length and is let into the iron socket a distance of 21″, thus making a pole 28 ¼′ long. The poles are set 6′ into the ground and are spaced about 130′ apart. The two Kolar transmission lines, consisting of 110 B. & S. copper wire arranged equilaterally with 40″ between wires, run parallel 60′ apart and are supported on white porcelain insulators of Italian make having five *petticoats*. Iron pinare cemented into the insulators with Ports land cement, and it has been observed that this is one of the causes of an occasional cracked insulator.

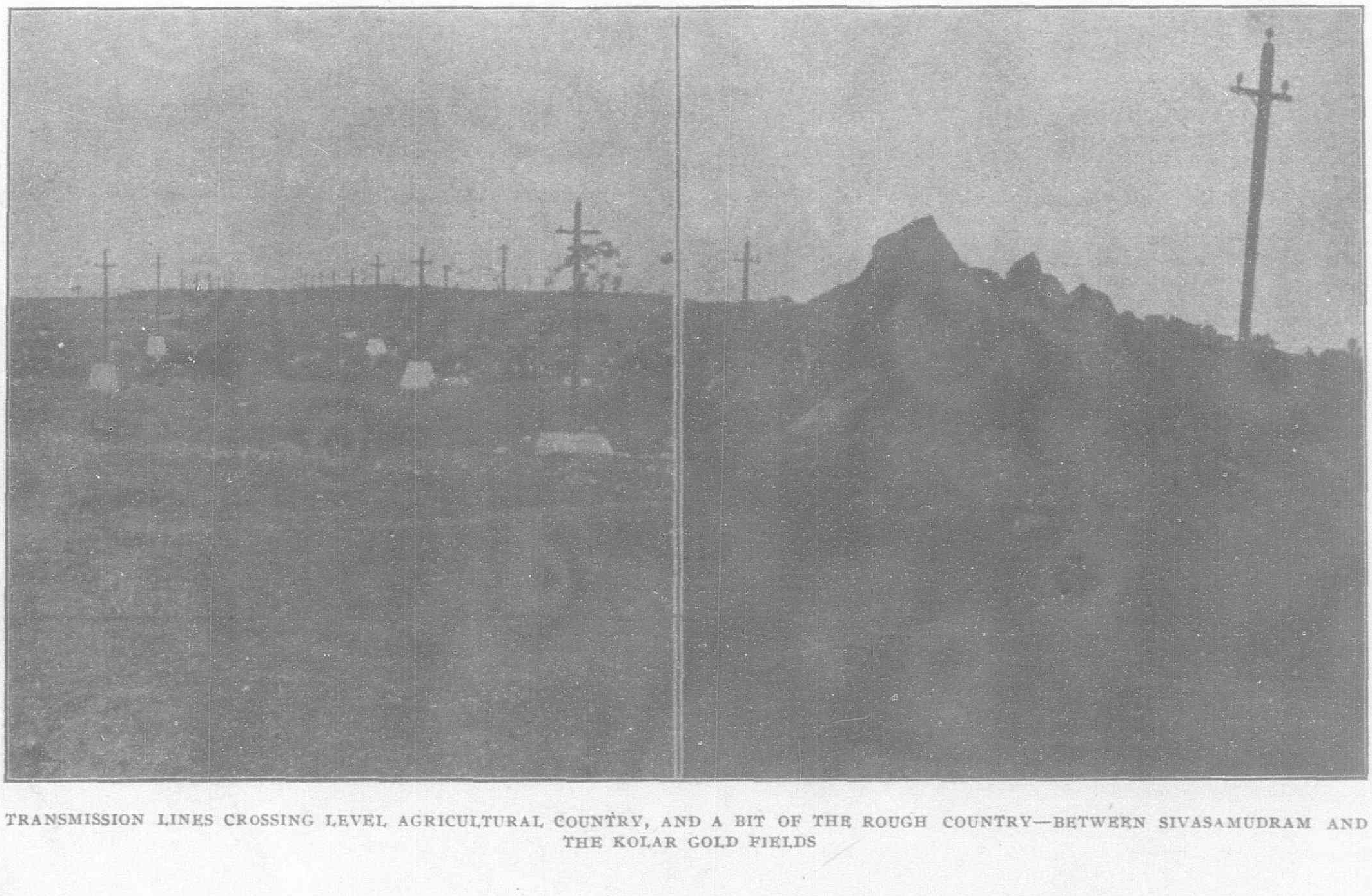


STEP-DOWN TRANSFORMER STATION SHOWING THE TWO TRANSMISSION LINE ENTRANCE TOWERS—KOLAR GOLD FIELDS

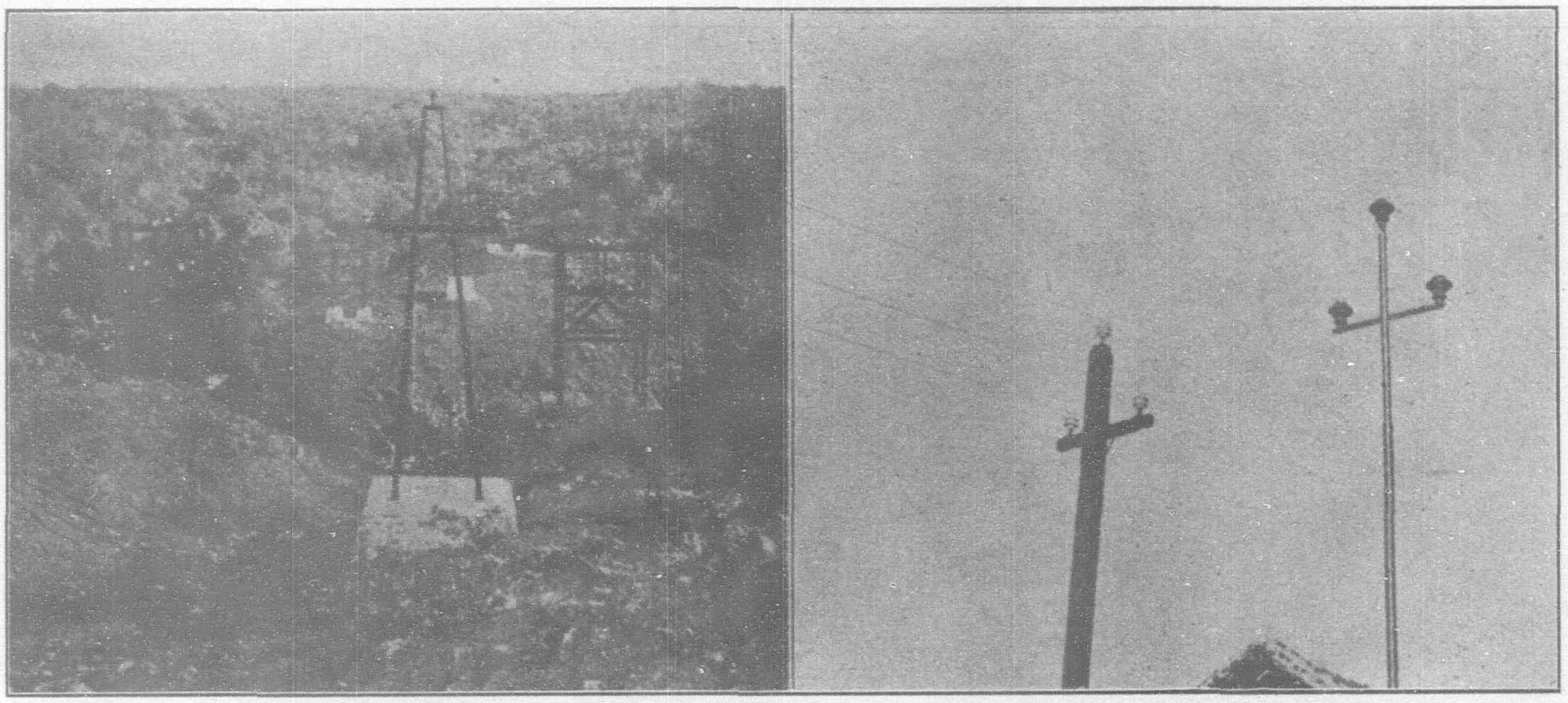
POLES RENDERED UNSERVICEABLE BY LIHGTNING STROKES.—Several poles have been rendered unserviceable by lightning strokes. This climate is very severe on wood exposed to the sun—causing *dry rot*—it being undoubtedly advisable (taking also the destructive white ant into consideration) to use iron poles and crossarms. The slight advantage to be obtained by the use of wooden poles is more than offset by the trouble and cost of necessary renewals and their short life as compared with iron poles.

Profiting from the experience of using wooden poles and porcelain insulators with cemented iron pins on the two Kolar transmission lines, it was decided to use wrought-iron poles with iron crossarms, and high-tension insulators with wooden-headed pins in the construction of the Bangalore-Sivasamudram transmission line. This line is 62 ms. long and is composed of No. 5 B. & S. copper wire supported equilaterally 40″ apart on Locke brown porcelain insulators. The latter are 11″ high and are divided into three sections cemented one into the other. Each section forms one *petticoat*. The diameter of the large umbrella-shaped *petticoat* of the top section is 11″, the middle *petticoat* is 6″ in diameter, and the bottom *petticoat* 5½″. An accompanying photograph illustrated the two types of insulators mounted on poles, the larger one being the Locke insulator. The latter has been tested at 100,000 volts at the factory. Thus provision has been made, by the use of these high-voltage insulators, for a future increase of the line pressure should occasion require.

LINES PARALLEL EACH OTHER.—The Bangalore line runs parallel with the two Kolar lines and at ⅓ of the distance between them as far as Kankanhalli Station. This spacing leaves ample room for a fourth transmission line. The poles are cylindrical, hollow, with ¼″ thickness of metal, and are divided into three lap-welded sections measuring 6′, 8′, and 14′ respectively, and with outside diameters of 3″, 3½″, and 4″. The total length of the pole is 28′. The crossarm is a 2½×2½″ angle-iron about 44″ long. The insulators



TRANSMISSION LINES CROSSING LEVEL AGRICULTURAL COUNTRY, AND A BIT OF THE ROUGH COUNTRY—BETWEEN SIVASAMUDRAM AND THE KOLAR GOLD FIELDS

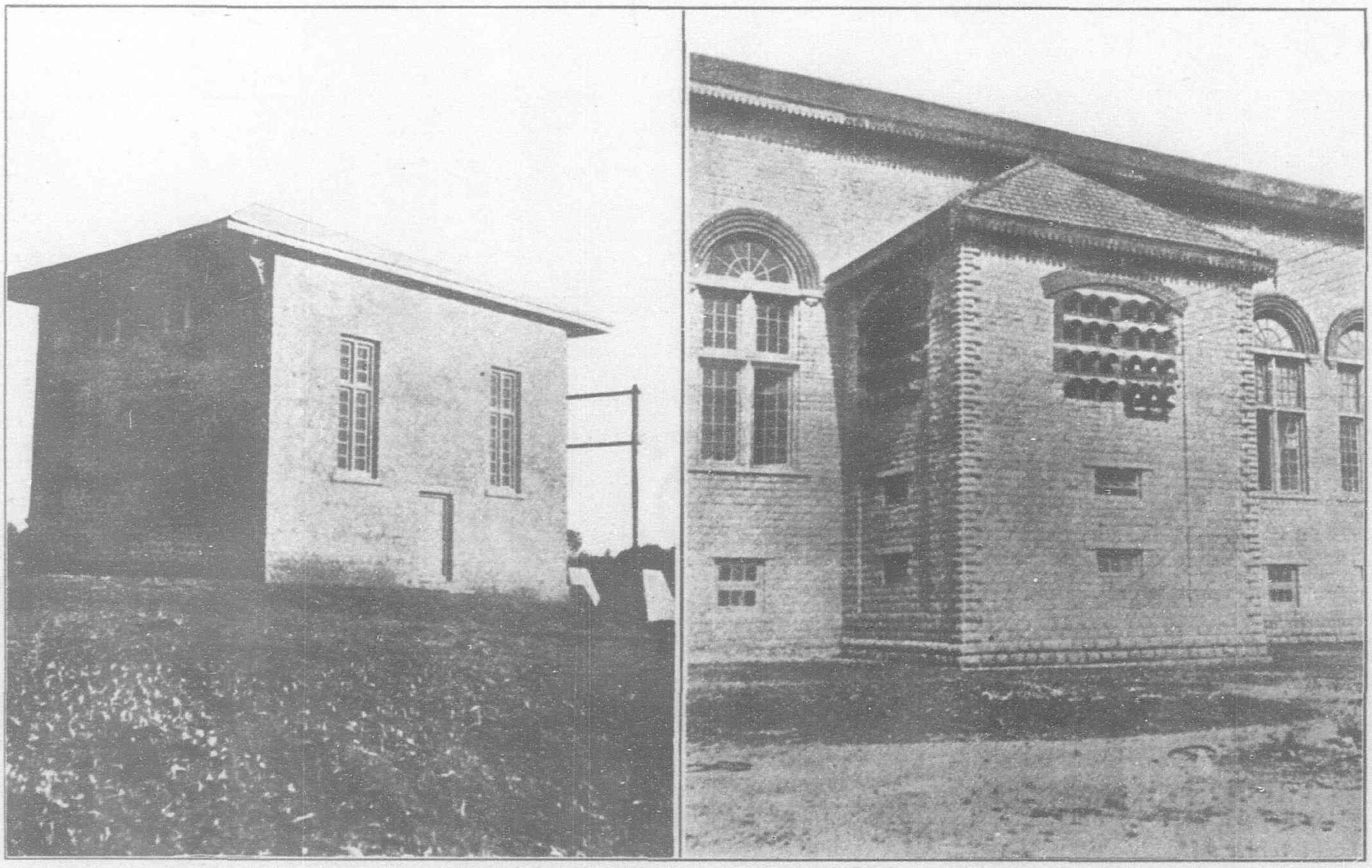


TRANSMISSION LINES NEAR SIVASAMUDRAM; IRON STRUCTURE IN FOREGROUND SUPPORTS BANGALORE TRANSMISSION LINE ON LOCKE INSULATORS. VIEW OF POLE TOPS AND INSULATORS; BANGALORE TRANSMISSION LINE, WITH LOCKE INSULATORS, ON THE RIGHT; KOLAR TRANSMISSION ON THE LEFT

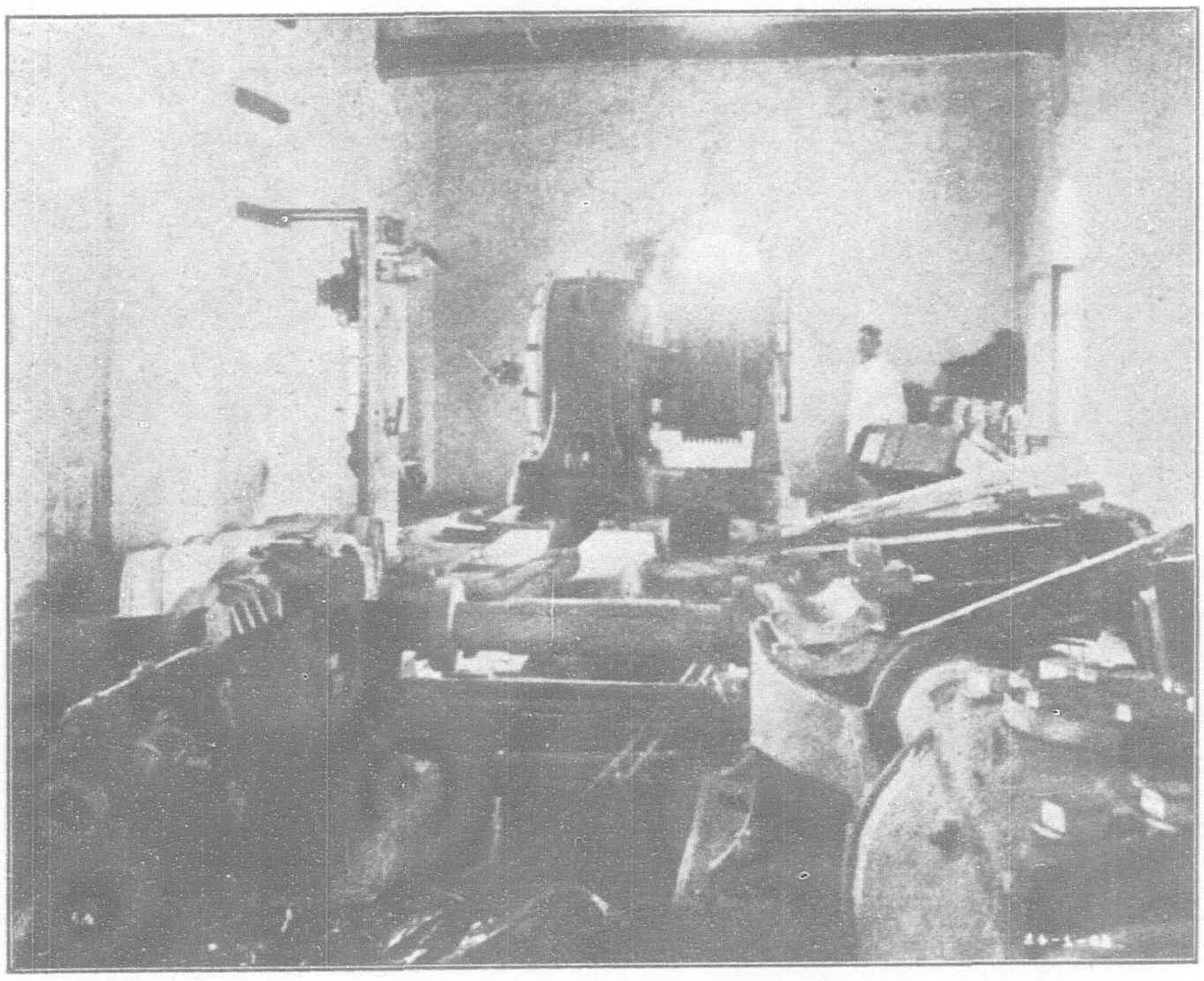
supporting the two lower wires are bolted to this angle-iron. The top insulator is bolted securely to a small angle iron, which in turn is bolted inside of the top of the iron pole.

SECTION HOUSES.—Two section houses are located at such points on the Kolar lines as to divide them into three approximately equal sections. Each section house contains the necessary switching apparatus for either isolating or paralleling the sections of transmission line under its control. This is a most advantageous arrangement as only ⅓ of one line need be out of service at any one time for repairs, leaving 5/6 of the original copper in service. One section is located at Kankanhalli and the other at Sarjapur. An attendant is always stationed in each section house in case he may be needed at any time for *cutting out* a section of line.

Another desirable feature is the increased protection of the transmission lines through the installation of lightning arresters in the two section houses. All of the arresters are of the high resistance carbon air-gap type manufactured by the General Electric Company, Schenectady, N. Y., U. S. A. Observance of the effect of lightning discharges on different parts of the transmission lines reveals the fact that those sections at river crossings, although they are the lowest points, generally sustain the most damage. This would tend to prove that the proximity of moisture plays a most important part. Of the several river crossings the longest span is 580′. Silicon-bronze cables are used at these points. They are spread out horizontally about 10′ apart and anchored on special reenforced pole structures.



TRANSMISSION LINE SECTION HOUSE AT KANKANHALLI. NEAR VIEW OF LOW-TENSION DISTRIBUTION TOWER, TRANSFORMER STATION, KOLAR GOLD FIEDS



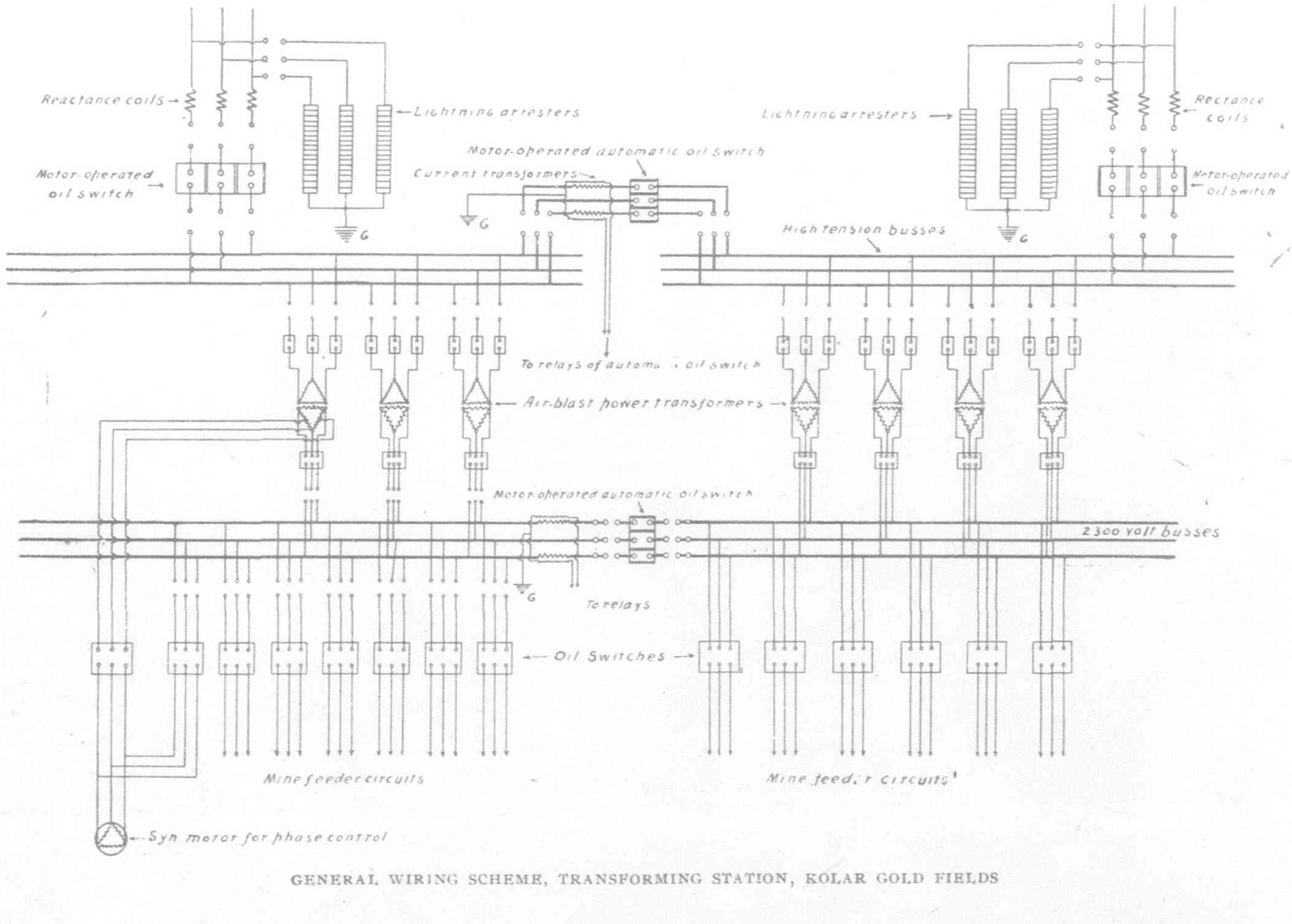
ASSEMBLY OF INDUCTION MOTOR-DRIVEN INGERSOLL-SERGEANT AIR-COMPRESSORS AT COROMANDEL MINE—KOLAR GOLD FIELDS

COUNTRY HAS VARIED TOPOGRAPHICAL FEATURES. The lines cross a country of varied topographical features, including hills, rivers, level agricultural country, and country overgrown with jungle. In the 92 ms. of line between Sivasamudram and Kolar the linewires undergo three complete transpositions. Supported on the poles of one of the duplicate transmission lines, on crossarms located 6′ below those carrying the main wires, is the telephone line establishing communication between Sivasamudram and Kolar, and intermediate points on the line. A small telephone exchange is located in the section house at Kankanhalli, at which place the line superintendent is stationed. A branch line from the latter place communicates with the head office at Bangalore. The telephone wires are transposed every fourth pole. Telephone communication is very difficult when a *ground* occurs on one of the transmission lines. The telephone wires then get an induced charge and the call-bells ring continuously until the source of disturbance is removed. During the dry season the line wires become heavily charged with atmospheric electricity and this also affects the telephone lines to some extent. On the whole, however, telephone communication is very satisfactory.

NATIVES TROUBLESOME.—Much trouble and annoyance has been caused by natives cutting the telephone wires and making use of the copper obtained thereby for making jewelry and fancy articles. In order to correct this difficulty, after having used all other means at disposal and failed thereby, it was found effective to charge the line during the night with a pressure of 1,000 volts. In case it is desired to reestablish communication during the night, a lamp and fuse is the signaling device.

KOLAR DISTRIBUTION.—The step-down transformer station at the Kolar Gold Fields is, of course, the electrical center of distribution of power to the various mines. Here the current is received at a pressure of approximately 30,500 volts and is stepped to 2,300 volts for distribution. About 3,650 h. p. is used for driving air-compressors, 2,900 h. p. for the operation of stamping mills, while approximately 500 h. p. operates small hoists, pumps, and stone-crushers. Motors rating from 100 h. p. up to 400 h. p. are wound for 2,080 volts and the smaller ones for 220 volts.

During the first installation some 30 motors and 11 Ingersoll-Sergeant Drill Company's air-compressors were installed by the General Electric Company. All of the air-compressors, with the exception of three, are driven by induction motors; two Ingersoll-Sergeant and one Walker compressor being driven by synchronous motors. All of them use rope drive. All of the synchronous motors and several of the large induction motors use starting


Reactance coils
Lightning arresters
Motor-operated automatic oil switch
Current transformers
Motor-operated oil switch
G
G
Lightning arresters
Recrance coils
Motor-operated oil switch
G
High tension busses
To relays of automatic oil switch
Air-blast power transformers
Motor-operated automatic oil switch
2300 volt busses
G
To relays
Oil Switches
Mine feeder circuits
Mine feeder circuits
Syn motor for phase control

GENERAL WIRING SCHEME, TRANSFORMING STATION, KOLAR GOLD FIELDS compensators. Resistance starting for induction motors is, however, much preferred where the starting of such motors is of frequent occurrence, as must necessarily be the case in mining installations.

GOLD MINES AND ELECTRIC POWER CONSUMED BY EACH.—Below is given a list of the several gold mines with the approximate of electric power consumed by each:—

Mine	H. P.
Mysore	1,750
Champion Reef	1 950
Oorgaum	1,175
Nundydroog	500
Oriental	150
Balaghat	450
Tank Block	350
Coromandel	150
Gold Field	150
Nine Reefs	150

Though this is the motor rating, the actual rating, or h. p. consumed, will fall somewhat below these values. Though the general arrangement in the Kolar transformer station is much the same in most respects as that at Sivasamudram, there are one or two additional features worthy of consideration. One of these is the installation of a 1,000-h. p. synchronous motor which is used solely for phase control or power-factor regulation of the system. With proper control of the field excitation of this motor, assisted by the field excitation of the three synchronous motors used for power purposes, it is possible to operate with normal load near unity power-factor.

PHASE CONTROL OF LONG TRANSMISSION LINES.—Phase control of long transmission lines is now considered almost as important as voltage control. Low power-factor means greater line loss, over-excitation of generator fields, heavy overload armature current for full kw. output of generator, and, in fact, low efficiency of the entire system. Strengthening the field excitation of the synchronous motor decreases the line current and consequently the armature and field currents of the generators. The synchronous motor, instead of the generator, supplies the lagging or so-called *wattless* component of the current. In addition to controlling the power-factor, the synchronous motor may also be used for voltage control within limits. As a power-factor is raised in value, the inductive loss on the line decreases, the voltage drop is lessened, and the receiver voltage is correspondingly increased.

Though the electric power consumed by the mines has almost doubled and the voltage of transmission raised only 5,000, the line loss for normal load has only increased from 12 per cent to approximately 16 per cent, due to the high power-factor obtainable. A critical examination of line characteristic curves has demonstrated the importance of phase control of transmission lines. The curves were taken with constant voltage and almost constant load at the receiving station. The decreasing difference between the values of power-factor at the transmitting and at the receiving ends of the line, as current and voltage were brought more nearly into phase, was very marked.

Another noticeable feature was the decrease of generator field current with increase of synchronous motor field excitation. This was due, of course, to the fact that the synchronous motor absorbed to so-called *wattless* current in the generator armature, which otherwise opposed the generator field magnetization, thus calling for an increase of exciting current to offset the demagnetizing armature current.

Provision has been made for starting the 1,000-h. p. synchronous motor by means of ½-voltage taps on the secondaries of two transformers of one bank of power transformers. Thus we have practically a 2-transformer, 3-wire arrangement for securing ½-voltage (1,150 volts) for starting, while the secondary of the third power transformer acts as a balancing coil.

BUS-SECTION OIL-SWITCHES, AND LOW-TENSION SWITCHBOARDS.—The high and low-tension bus-section oil-switches are opened by automatic relays with a 2,000-kw. unbalancing of load on either side of the station. These switches are motor-operated from a storage battery of 54 cells. The battery is charged from the 1,000-h. p. synchronous motor exciter unit connected on the same shaft.

The low tension switchboards on the main floor consist of eight transformer bank panels, 16 feeder panels, three total output meter panels, one line and bus-section switch control panel, three local lightning and blower-motor panels, and one synchronous motor panel. In addition to the volt, watt and current meters on the synchronous motor panel is a motor-factor meter. With rheostatic control of the field excitation of the motor, the switchboard attendant has direct control of the power-factor of the system as well as voltage regulation at the receiving station within limits.

(To be concluded in THE REVIEW *for May)*

WORLD'S GREATEST BORE

According to *The London and China Express*, Admiral Usborne Moore, R. N., of Alverstoke, delivered an exceedingly interesting lecture recently at Southsea, upon *Tidal Phenomena*. Admiral Moore was entrusted by the Admiralty with the first scientific survey ever made of the great Yangtsze bore. The admiral said that four essentials are required to make a bore, *(1)* a fast-flowing river, *(2)* a sandbar at the mouth, *(3)* a funnel-shaped estuary, and *(4)* a tidal wave coming into the estuary "bows on." All these his expedition had to perfection in the Tsieng-tang Kiang, the great tributary of the mighty Yangtsze. Twice daily the tidal wave rushes in from the Pacific Ocean and, cooped up in the sand-banked estuary, the waters periodically rise to a height of nearly 20′ in places before they can overcome the pressure of the fast flowing river. The lecturer gave a graphic description of how the tidal wave from one channel cuts right through the stream from another channel, and throws itself bodily on the great seawall the Chinese built, and then he related his experience in "lying to" all night and meeting the minor part of the bore—no boat could live in the full bore, of course. Two of his companion vessels were carried away and found themselves next morning many miles up stream.

TONG-KING-YUNNAN RAILWAY

The rapid progress recently made by the French railway in Tong-King and the question of its continuation into Yunnan deserve notice. The great difficulty in the planning of the line was to discover the least costly and best alignment above Hokow, and this was accomplished after a careful survey of alternative routes during the year 1903. The French Government sanctioned the scheme in 1904, and work was begun in due course. There is no denying the fact that since the establishment of the *entente cordiale* the French have proceeded with their task in a spirit of increased confidence, and already they are looking forward to its early completion. The section of the line that is now in hand connects Hokow by the Nanhoi Valley and the City of Yunnanfu is easily accessible. The total length of the section is 288 ms.; the line from Hokow to the Songkoi Delta has been working for several years. The great difficulty of the Chinese half of the line arises from the tunnelling work, and this may be judged from the fact that nearly 100 tunnels will have to be pierced. The longest of these is 650 yds. in length. A large number of bridges, viaducts, and cuttings have also to be made, so that when the railway is completed it will be altogether a remarkable engineering feat. It is hoped that the line will be open for traffic as far as Mengtszu in the early part of next year, and that the whole will be completed 12 mos. later. The undertaking not merely reflects the highest credit on the skill and patience of the French engineers, but also promises to prove very successful as a commercial undertaking because much of the trade of Yunnan will flow down to the Gulf of Tong-king.

While this railroad is advancing towards completion a more modest scheme is likely to be commenced on the Burmese side of the Yunnan frontier. This is the light railway intended to connect Bhamo and Tengyueh in Yunnan. Survey parties are already engaged along the route, and it is hoped that their labors will be completed in about 2 mos. from the present time.

AMERICAN SHIPPING BILL

The revised bill proposed by the merchant marine commission has been presented to both houses of congress. Under the provisions of the present bill, the entire amount of the subsidies to be paid to American ships during the first year after the passage of the bill will be less than the amount to be realized from the new tonnage taxes which are to be imposed upon foreign vessels. In the second year about $1,700,000 will be required from the treasury in addition to the tonnage taxes. Thereafter it is expected the increase in bounty will amount to about $300,000 annually.

The total payments to American ships under the proposed bill will be but a fraction of the amount which is paid by Great Britain, France, or Germany in subsidies to merchant vessels. It will be some years before the annual payments will be equal to those now made by such countries as Japan and Italy to aid in establishing and maintaining an ocean merchant marine.

Every country having a coast line, save the United States alone, has evidenced a high sense of the value of an ocean marine by paying subsidies to keep its ships afloat in foreign trade. The highly patriotic and intelligent Japanese, who have just had an object lesson of the great value of a merchant marine, to a country engaged in war, are coming to the aid of their government, which has other heavy burdens to carry, and are raising by private subscription the sum of 15,000,000 yen, to be devoted to the building of high-class merchant steamships of a type readily to be converted into auxiliary cruisers in time of war. This money is to be expended without hope of pecuniary profit, but merely to aid the government in its purpose of creating a large merchant marine, through which to expand Japan's trade and to be an auxiliary naval force in time of war.

With the many lessons before it, Congress should not delay the passage of the present bill, which represents the conclusion reached as to the least expensive method of aiding in the rehabilitation of American deep-water shipping which yet could hope to accomplish any results. President Roosevelt, in his message to Congress. has given his approval to the measure presented by the Commission and has called the attention of Congress to the necessity of taking action on it. The merits of the bill are self-evident; and there is no excuse, says the *Seattle Post-Intelligencer*, for neglecting to take action on this important matter at the present session.

Great Activity in Schoolbuilding Construction Throughout the Philippines

Schoolhouse construction is being carried forward with great activity throughout the Philippine Islands at the present time, and hundreds of thousands of pesos are being expended in this direction. As schoolhouses are one of the best indications in the general public interest in education, there seems to be little more left to be said about the eagerness of the Filipinos to secure in this line what the American government is offering them.

From the standpoint of construction this big building campaign is furnishing new architectural ideas which are interesting to follow. While all of the plans show a more or less close regard for the prevailing Spanish-Filipino style of construction, on both exteriors and interiors, the architect to the Bureau of Education, Mr. Chard, has never failed to introduce American ideas and American arrangements to bring the buildings as nearly as possible up to the standard of the modern school building in the homeland, keeping in mind all the time, however, that the demands of the tropics are always a first consideration. Reinforced concrete and native hard woods are the principal materials being used in construction.

At the request of THE FAR EASTERN REVIEW, Mr. Gilbert W. Brink, assistant director of education, has furnished some interesting data relative to schoolhouses being built in the various provinces at the present time, or whose construction will begin in the very near future. This data follows:—

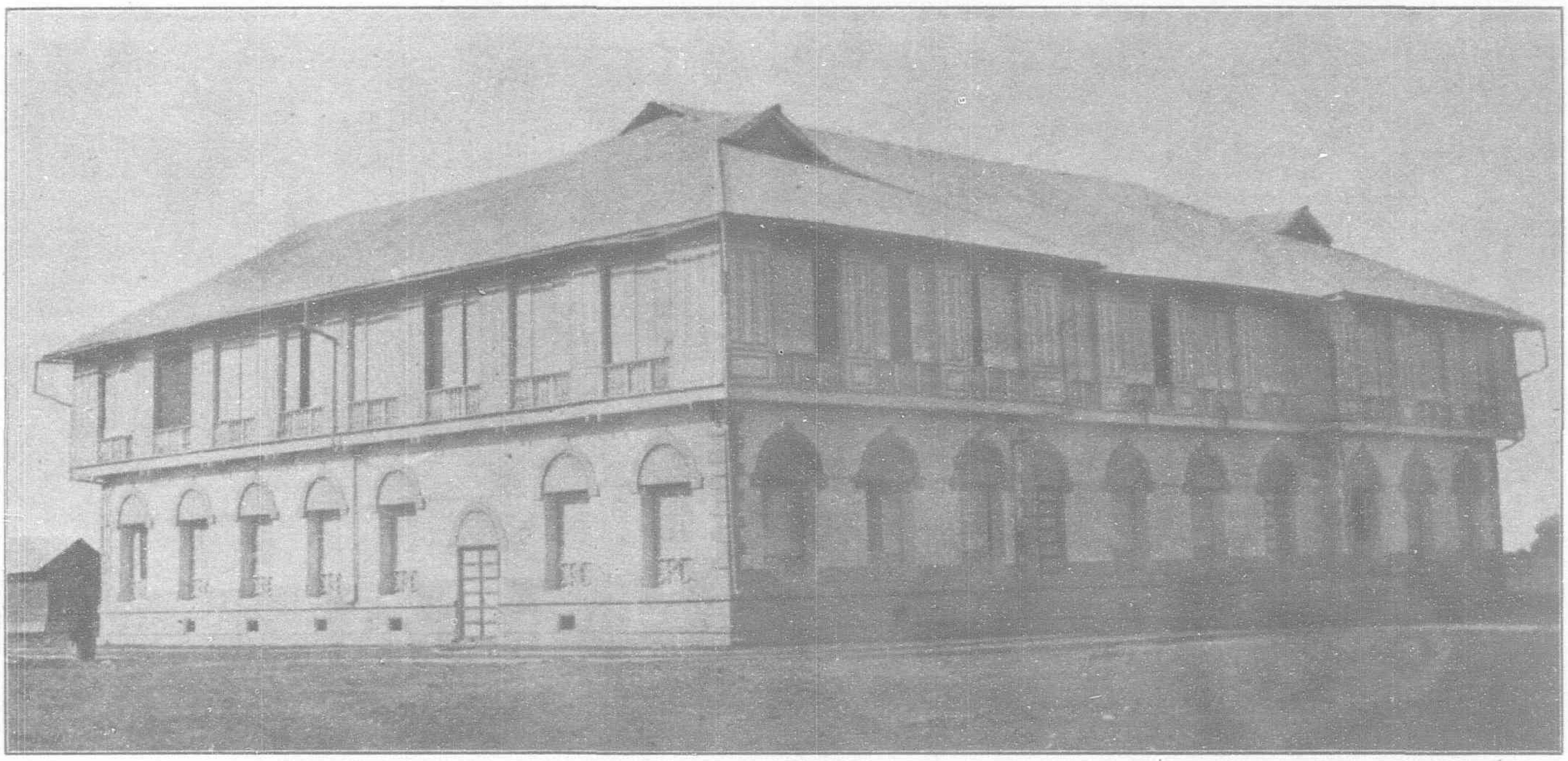
Ilocos Sur.—₱12,000 for a shop building in which will be taught iron-working, wood-working, wheelwrighting, blacksmithing, and mechanical drawing. This building is to be constructed upon the foundations of the large public building completed in Spanish times, but destroyed in the insurrection. Its value when completed will approximate ₱20,000.

Albay.—A high school has just been completed at a cost of from ₱30,000 to ₱40,000. In addition to this, ₱8,000 from insular funds are set aside for the construction of a shop building which will be begun in the very near future. The work in this shop building will be primarily wood-working, including carpentry, cabinet making, and wheelwrighting.

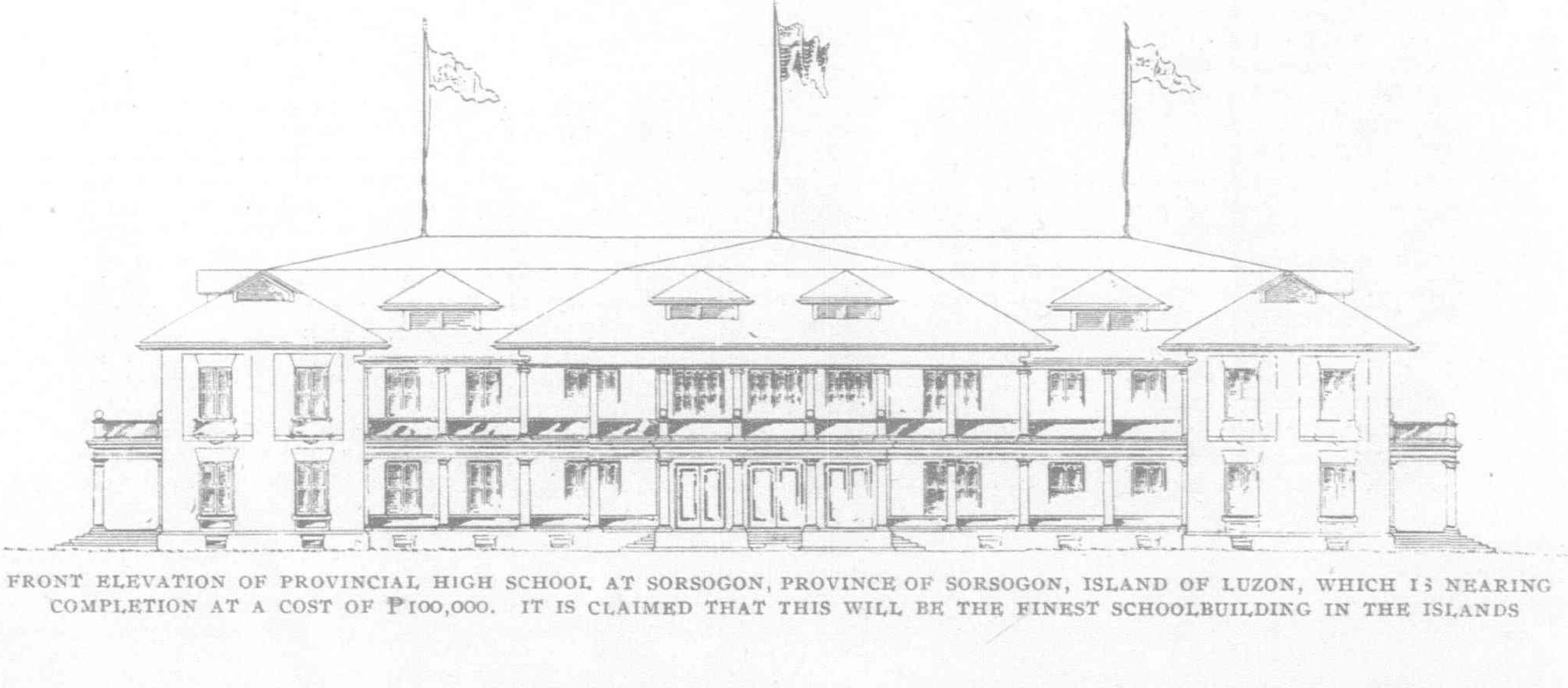
Ambos Camarines — ₱8,000 from insular funds are allotted to this province for the construction of a shop building in which will be taught wood-working, and in connection with which will be carried on courses in agriculture.

Antique—₱6,000 have been set aside from insular funds for the remodelling and repair of the large municipal school building purchased by the province for a provincial school.

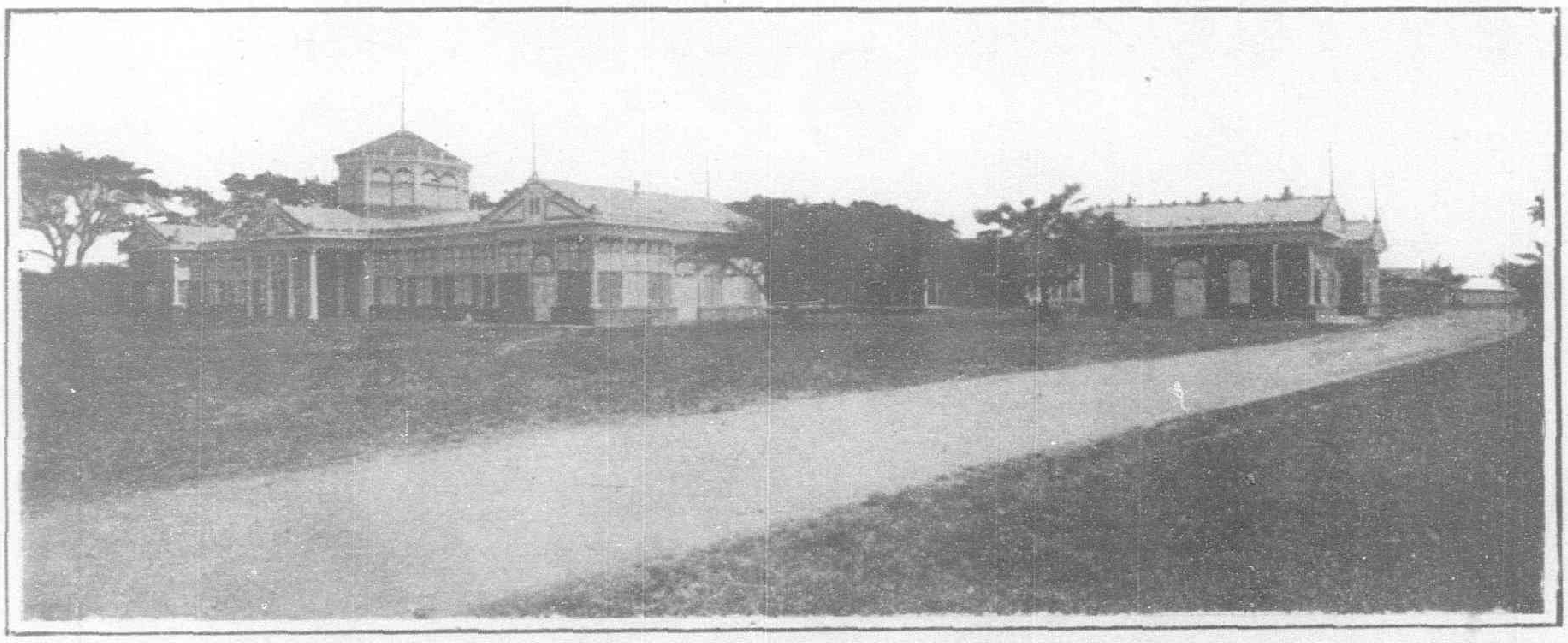
Bataan.—Bataan has secured ₱6,000 from insular funds and is raising ₱5,000 locally by popular subscription which will give a total fund of ₱11,000 for the construction of a building for the provincial school.



NEW PROVINCIAL HIGH SCHOOL AT BATANGAS, PROVINCE OF BATANGAS, ISLAND OF LUZON, IN WHICH COMBINATION OF AMERICAN ARCHITECTURAL IDEAS WITH SPANISH-FILIPINO TYPE IS VERY PRONOUNCED



FRONT ELEVATION OF PROVINCIAL HIGH SCHOOL AT SORSOGON, PROVINCE OF SORSOGON, ISLAND OF LUZON, WHICH IS NEARING COMPLETION AT A COST OF ₱100,000. IT IS CLAIMED THAT THIS WILL BE THE FINEST SCHOOLBUILDING IN THE ISLANDS



VIEW OF PHILIPPINE NORMAL SCHOOL WITH SCIENCE BUILDING IN FOREGROUND, MANILA, WHICH GIVES A FAIRLY GOOD IDEA OF SPANISH-FILIPINO ARCHITECTURE

Batangas.—Batangas has recently constructed an excellent provincial school building from funds secured by the sale of government rice, and now has ₱5,000 allotted from insular funds for the purchase of an intermediate school plant at Lipa in connection with which will be conducted experiments in agriculture with special attention to coffee culture.

Benguet.—Benguet has secured ₱6,000 for the construction of an industrial school for the Igorot children, special attention in this school being given to the wood-working and the making of agricultural tools.

Bohol.—Bohol has secured ₱10,000 from insular funds and has appropriated an additional ₱10,000 from provincial funds for the construction of a provincial high school building, and has also appropriated ₱6,000 for the construction of an industrial school. In addition to this the people of Tagbilaran, the capital of the province, have subscribed ₱1,000 for the purchase of a wind mill pumping plant with which to raise water for house purposes and for the irrigation of school gardens. Considerable work in agriculture will be done here.

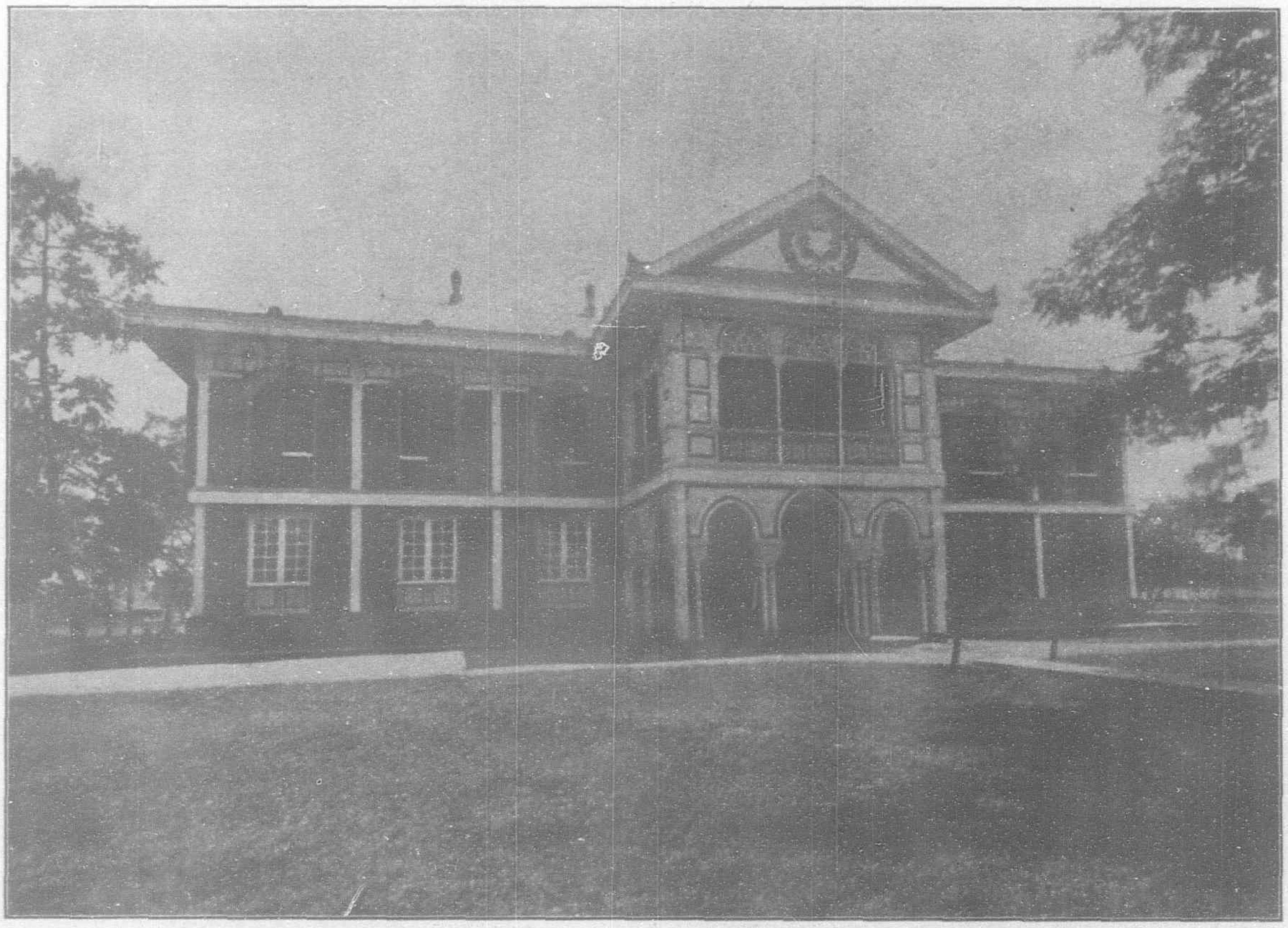
Bulacan.—Bulacan received ₱10,000 from insular funds and voted in addition ₱22,000 from provincial funds for the construction of a provincial high school building, which is already completed and is one of the best appointed school buildings in the archipelago.

Cagayan.—Cagayan receives ₱8,000 from insular funds, appropriates ₱2,000 from provincial funds for the construction of an industrial school building. In this building will be conducted classes in iron-working, wood-working, wheelwrighting and mechanical drawing. Special attention will also be given agriculture. The province has recently purchased a site with buildings on it for the provincial high school.

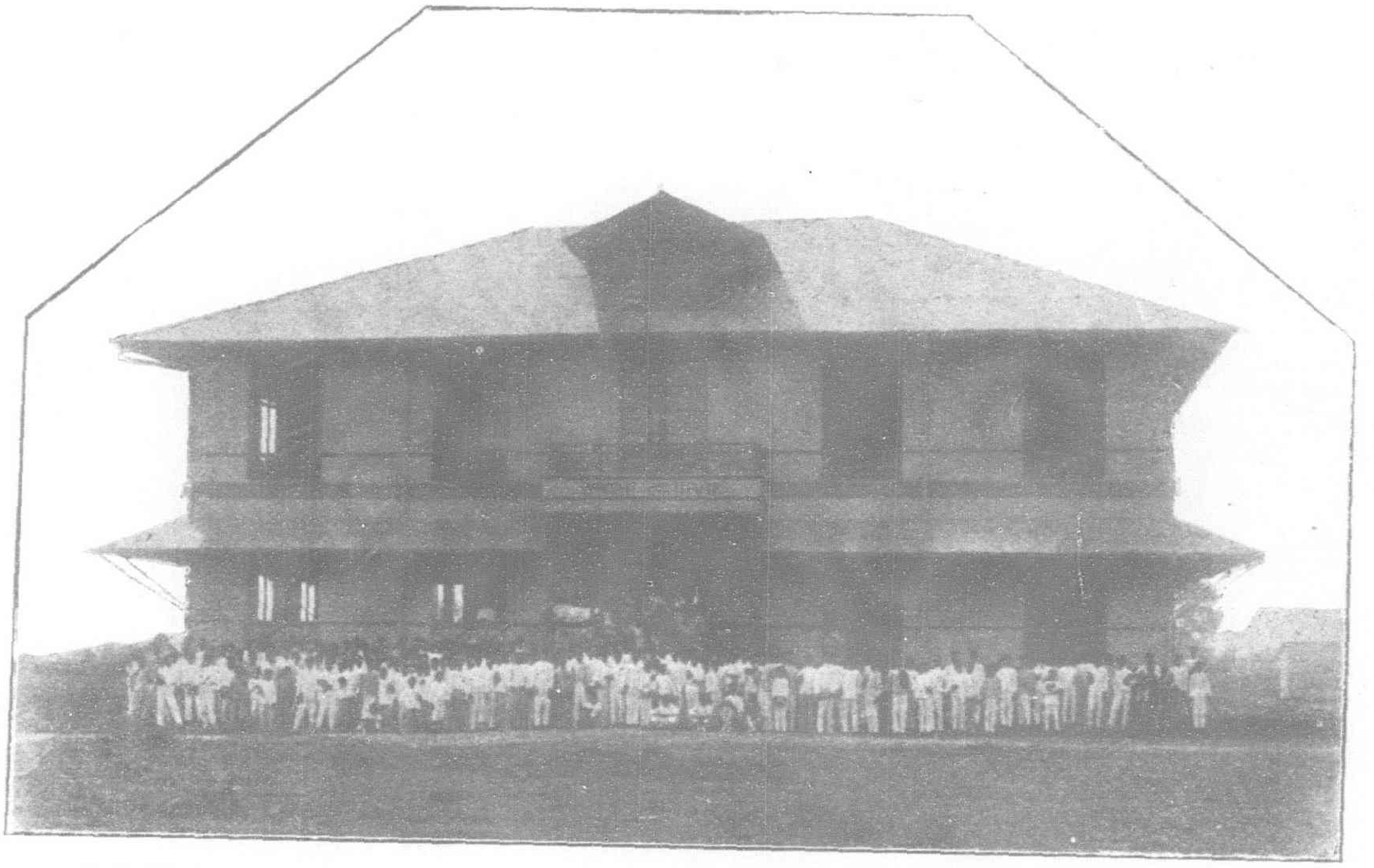
Capiz.—Capiz receives ₱8,000 from insular funds for the construction of a shop building, the people donating an ample site in Capiz, and additional funds being provided by the province and the people.

Cavite.—Cavite received ₱8,828 for the construction of an intermediate school at Indang. To this was added ₱1,000 appropriated by the province. This building is complete and now ready for occupancy. ₱12,000 has been set aside for the construction of shop buildings in Cebu upon condition that adequate sites are provided and some additional money locally.

Ilocos Norte.—Ilocos Norte received a large amount of the government rice and from it constructed a very large and well appointed



MAIN BUILDING, PHILIPPINE NORMAL SCHOOL, MANILA, WHERE THE BEST STYLE OF SPANISH FILIPINO ARCHITECTURE IS SHOWN



NEW PROVINCIAL HIGH SCHOOL AT SAN ISIDRO, PROVINCE OF NUEVA ECIJA, NORTHERN LUZON, IN WHICH AMERICAN STYLE OF ARCHITECTURE IS DECIDEDLY PRONOUNCED

high school building during the past year. Its value is probably close onto ₱40,000.

Iloilo.—Iloilo receives ₱32,000 insular funds, ₱10,000 provincial funds and ₱15,000 municipal funds with which to construct provincial high school, provincial shop buildings, in which will be conducted classes in woodworking, iron working, drawing, wheelwrighting, blacksmithing, etc. A site of 10 hectares was purchased of the province for this school, and another site of 1 hectare was purchased by the municipality for the intermediate school—the intermediate school being also constructed out of these funds.

Isabela.—Isabela receives ₱10,000 insular funds, and secures approximately ₱4,000 additional for the construction of an intermediate school at Ilagan.

Laguna.—Laguna receives ₱10,000 for the construction of a high school, appropriates ₱10,000 from provincial funds and has a site donated for the location of the high school. Still further appropriation by the province is expected for this purpose.

Union.—Union province received ₱12,000 from insular funds for the construction of a high school, and provides a certain amount of voluntary work and materials contributed for the completion of this building.

Leyte.—Leyte receives ₱10,000 from insular funds, appropriates ₱10,000 from provincial funds and has secured several thousand pesos on private contributions within the province for the construction of the high school at Tacloban.

Manila.—Manila received ₱6473.85 for repairs and extensions on the insular normal and trade schools located here.

Masbate.—Masbate secures ₱8,000 for the construction of a central school at that place, the site to be provided locally.

Mindoro.—Mindoro receives ₱5,000 insular funds for the construction of a shop building, which is already completed.

Misamis.—Misamis is to receive ₱8,000 for the construction of a small high school building. Local donations will be added to increase the available amount.

Occidental Negros.—This province received ₱8,000 from insular funds and ₱20,000 by a loan. Three thousand and some odd pesos in addition were provided locally.

Oriental Negros.—This province received ₱6,000 from insular funds and ₱20,000 by loan, with which to construct a high school building at Dumaguete.

Nueva Ecija.—Nueva Ecija received ₱8,000 from insular funds for the construction of an intermediate school building at Cuyapo.

Pampanga.—Pampanga will receive ₱12,000, part of which will be employed in the remodelling and repairing of an industrial school building at Bacolor and the remainder in the construction of a high school building at San Fernando.

Pangasinan.—Pangasinan receives ₱8,000 for the construction of an intermediate school at Binalonan. To this amount is added ₱10,000 provided by the town.

Palawan.—Palawan received ₱4,000 for the construction of a shop building at Cuyo.

Rizal.—Rizal received ₱9,252.75 from insular funds which was expended in part upon a shop building at Pasig, an intermediate school building at Marong and an intermediate school building at Malabon.

Romblon.—Romblon receives ₱8,000 insular funds, to which will be added several thousand pesos provincial funds.

Samar.—Samar is to receive ₱8,000 for the construction of shop buildings.

Sorsogon.—Sorsogon is to receive ₱12,000 which are to be added to some ₱50,000 provided by the province for the construction of a high school building. This building will probably be the handsomest building constructed in the islands in the near future.

Surigao.—Surigao received ₱16,000 from insular funds in addition to ₱16,000 provided locally by popular subscription for the construction of high school and shops.

Tarlac.—Tarlac receives ₱7,000 for the construction of shop buildings at Tarlac in which the usual courses will be given.

Tayabas.—Tayabas received ₱12,775 from insular funds which were added to ₱14,000 provincial funds, for the construction of a high school building at Lucena.

Zambales.—Zambales receives ₱8,000 insular funds, and provides about ₱6,000 from provincial funds and by private subscription for the construction of the high school at Iba.

Nueva Vizcaya.—This province receives ₱6,000 from insular funds for the construction of a small provincial school building at Bayombong.

MANILA ELECTRIC R. R. & L. CO.

On April 10th the Manila Electric Railroad and Light Company celebrated the first anniversary of the opening of its tramway, light and power system to the public. The first year's business was phenomenal. During that period the company carried over its transportation lines more than 10,000,000 fares, and during March last, alone, 872,000 passengers were handled. Some months during the year the number of passengers was greater and some months less, but the number is a fair average of the passenger business done per month. The earnings on this 10,000,000 fares exceeded ₱1,000,000, of which the City of Manila received 2½ per cent. The company has a total of 1,134 employés on its weekly payroll. Of this number 978 aré employed in the railway department and 156 in the lighting and teaming department. There are at present 85 cars running, and 10 new cars are being set up, with 10 additional cars on the way. Of the 10 cars being set up four of them are the new large cars ordered for the Malabon line, each having a seating capacity of 60 persons.

FOR RENT:—New apartments containing living room, dining room, kitchen, two bed rooms, bath, water closet, and large veranda. Modern plumbing; electric lights. Best situation in the city. Cool and comfortable. From ₱50 to ₱70 per month.

PIERCE & WHITTON,
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FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

PERSONAL

Dr. Kaname Haraguchi, an eminent Japanese, has been engaged as a railway engineer by the Chinese Government, at a salary of -Y-12,000 a year.

Mr. W. E. Shellim has resigned from the Board of Directors of the Hongkong and Shanghai Banking Corporation, being succeeded by Mr. D. M. Nissim.

Hon. F. Cooper, formerly of Hongkong, now director of public works at Ceylon, has been elected first president of an engineering association recently formed at Colombo.

Mr. R. Peirce has resigned the post of Municipal Engineer of Singapore, the resignation to take effect within 6 mos. Mr. Peirce has been in the service of Singapore for many years and retires on account of the inadequate salary his office pays.

Mr. J. W. Beardsley, consulting engineer to the Philippine Commission, has sailed for the United States. He expects to be absent from his post several months, during which time Mr. Kendall, his chief deputy, will have charge of the office.

Mr. H. D. C. Jones, manager of the Manila branch of the Hongkong and Shanghai Banking Corporation, has left his post here and sailed for England on a well-earned vacation. During his absence Mr. A. G. Stephen will act as manager of the Manila bank.

Mr. M. Sergey Friede, of New York City, has been appointed general foreign agent of the Chinese Eastern Railway Company, in the commercial freight and passenger departments. He is now in Shanghai, where he will maintain offices of the general foreign agency.

Mr. C. G. Warnford Lock, M. Inst., M. M., F. G. S., has just returned to Singapore from a 3 mos. tour of inspection and exploration in Kemaman, one of the little-known independent native states of the Malay Peninsula, and has since been engaged in reporting on extensive tin mines in the neighborhood of Raub. Mr. Lock, until about 1 yr. ago, was general manager of the mines of the Australian Raub Gold Mining Company, Ltd., at Raub, where he was successful in reducing working costs to an exceptionally low figure. He is a well-known and experienced mining authority. Messrs. Charleton, Dickinson & Co., mining consulting engineers, of 353 Mansion House Chambers, London, announce that they have made arrangements with Mr. Lock that he should act as their representative in the Far East. Mr. Lock has opened an office in Singapore and Messrs. Charleton, Dickinson & Co. have arranged to represent him in London.

Mr. W. G. Winterburn, M. I. N. A., has resigned the office of general manager of the well-known shipbuilding and engineering firm of Messrs. George Fenwick & Co., Ltd., of Hongkong, and will return to his home in England next month. At the recent seventeenth ordinary general meeting of the shareholders of this concern, Mr. A. Rodger, chairman of the board of directors, made the following merited allusion to Mr. Winterburn's retirement:—"Mr. Winterburn, our present general manager, who is leaving the colony in May, has resigned his position after 14 yrs.' service, throughout which time he has worked hard and done his best to promote the welfare of the company. We all wish him, I am sure, every success in his new undertaking." Mr. J. I. Andrew, who has been in the company's service for nearly 10 yrs. and understands the routine of the business, having carried on Mr. Winterburn's duties during his absence on leave for 10 mos. in 1901, has been appointed to succeed him.

RAILWAYS, SUPPLIES, ETC.

Peking-Kalgan Railway.—The first section of this line, from Fengtai to Nankao, has been opened to traffic.

Urga-Kalgan Railway.—It is proposed to construct a railway from Urga to Kalgan, which will prove an important factor in the development of Mongolia.

Light Korean Railway.—The light railway between Ham-hyung, Korea, and the sea coast, has, it is reported, been nearly completed by the Japanese authorities.

Hsinmintun Railway.—The Japanese have completed the first section of the Hsinmintun-Fengtien Railway, and an agreement has been concluded to hand over the line to the Chinese.

Kashgar (China) Railway.—The Governor of Shinking has been directed to raise funds for the building of the Kashgar Railway, which is urgently needed to facilitate trade and must be constructed at once.

Anhui (China) Railways.—The director of the Anhui Railways has notified the government that Kwang-te-chow is an important commercial center and he proposed first to construct a railway from Wuhu to that place.

Railway in Tibet.—The Chinese Government has approved a proposal for the construction of a railroad from Chengtu to Lhassa and it is expected that the work of construction will begin as soon as the Tibetan Treaty is signed.

Locomotives for Siam.—The Royal Railway Department of Siam has requested tenders for the supply of nine passenger and seven freight locomotives with spare parts. Drawings and conditions may be obtained against payment of Tcs. 5 at the central office of the department at Bangkok.

Canton-Hankow Railway.—According to the *Times of Malaya*, the Cantonese community of the Straits Settlements and the Federated Malay States have large financial interests in the Canton-Hankow Railway. In Ipoh, Perak, F. M. S., the Cantonese have taken up over $200,000 worth of stock.

Railway Construction in Burma.—Railway construction is proceeding with much activity in Burma just now, and one of the most important works of this kind in hand is the Pegu-Martaban line, whose terminus will be on the bank of the Salween River opposite to the N. end of Moulmein. There is also talk of a railway from this latter place S. to Yeh.

Szechuan-Hankow Railway, China.—This line is to be divided into four sections, three in Szechuan and one in Hubei, *viz.*: Section 1, from Chengtu to Chungking; Section 2, from Chungking to Wanhsien; Section 3, from Wanhsien to I-chang; Section 4, from I-chang to Hankow. The entire length of the line will be 3,600 *li*, only a trifle shorter than the Peking-Hankan Railway.

Korean Railways.—The Japanese Diet has under consideration a bill for the purchase of the Seoul-Fusan Railway and the amalgamation of all the railways in Korea. The cost of purchasing the Seoul-Fusan line is estimated at about -Y-30,000,000, including -Y-15,000,000 capital of the company; and -Y-10,000,000 advanced by the government from special funds.

Penang Hill Railway, S. S.—Mr. Fryer, chief engineer of the Federated States Railways, was recently asked to report on the Penang Hill Railway, Straits Settlements, the works on which had fallen short of requirements. According to *The Pinang Gazette*, the report is highly unfavorable. It recommends changes and improvements on the line at an outlay so heavy as to stagger investors.

Canton-Kowloon Railway.—The viceroy at Canton has asked the Peking Government to leave the construction of the Kowloon-Canton Railway in the hands of the British, owing to the repeated representations which have been made by the British and in view of the approaching commencement of the works at Kowloon. The work of construction may commence at both ends of the line simultaneously.

Kiukiang-Nanchang Railway.—It was originally intended that the first Kiangsi Railway should run from Tsai Chai-hu to Kiukiang, but the engineer who is locating the line considers that the route from Tsai Chai-hu is not favorable, so had to change it to begin from Sai-ko. The engineer is now busy at Kiukiang drawing up plans for the proposed new route to be submitted to proper authority for approval.

Water Supply, Bangkok.—It has been decided to unite the water supply scheme for Bangkok with the great irrigation scheme which is in progress by the Siamese Government. The new waterworks will, in all probability, be established at Samsen, with all the necessary equipment of reservoirs, filter beds, etc., and the water will be distributed by means of mains throughout the city. The work is expected to occupy about 3 yrs.

Sunning Railway, South China.—The promoter and director of the Sunning Railway, South China, for which the full capital has been subscribed by Chinese in America, expects soon to have the line under construction. With this line in operation it is intended to construct a line from Tan Sui Kow to Kongmun, and later on from the latter place to Heungshan. The preliminary survey of these prospective lines is now being arranged for.

Philippine Railway Company Incorporated.—The Philippine Railway Company has filed articles of incorporation with the secretary of state at Hartford Conn., U. S. A. The authorized capital stock is $5,000,000 gold, and the incorporators, all of whom reside in Hartford, are Arthur L. Shipman, Charles Gross, and Alvan W. Hyde. The Company proposes to operate steam and electric railways in the Philippine Islands and elsewhere, and to do a general transportation business.

Ningpo-Hangchow Railway.—It is reported from Hangchow that the British minister has refused to cancel the Ningpo-Hangchow Railway Concession, according to *The Universal Gazette*, and that the matter is being discussed between the minister and the Wai Wu Pu. Seng Kung-pao has written to Messrs. Jardine, Matheson & Co., the concessionaries of this line, that the agreement has become void. In reply Messrs. Jardine, Matheson & Co. said that the matter was now in the hands of the British minister at Peking, and that they refused to regard the agreement as cancelled.

Straits to Burma By Rail.—The Province of Tenasserim, Lower Burma, is receiving attention in the matter of railways, and indications are that in the near future Moulmein will become an important railway center. Besides the connection with Pegu, which is rapidly approaching completion, several other schemes are in the air. One is the reconnaissance survey now being conducted towards the Siamese frontier for a line to connect with the Siamese railway system. Another is the survey of a line to Yez, the construction of which will be the first step towards connection with the line in the Straits Settlements.

Railways in Borneo.—It has been decided to construct a line of railway across British North Borneo, the road to form a connection between the E. and W. coasts, and, when completed, will give a total length of 250 ms. The extension will commence at Tenom, 90 ms. from Jesselton, the principal coast terminus on the China Sea, and, traversing some of the most valuable timber lands of British North Borneo, will terminate at Cowie Harbor, on the E. coast. The extension is estimated to cost £1,500,000 and will be constructed in sections. It is intended to grant to the company which will be formed to carry out the scheme alternate blocks of land, each 40 sq. ms. in extent, which can be utilized for rubber, tobacco, etc. It is hoped that the work on this extension will be commenced early next year.

Railway Construction, Philippines.—Mr. H. A. Belden, general manager of Messrs. J. G. White & Co., Inc., in the Philippine Islands, has received a letter from the home office of his company in New York City to the effect that preparations for the active work of constructing the railway lines on the islands of Cebu, Panay, and Negros, are now under way. Plans and contracts for material are all being arranged in New York. The home office is sending out a staff of expert field engineers for survey work, and Mr. Belden says that when work is well under way fully 5,000 men will be employed, at least 300 of which will be Americans. Filipino common labor will be given preference over other such labor if it is forthcoming. If not resort will be taken to Japanese labor. Most all the carpenter work will be done by Japanese.

Railways in North Borneo.—It has been decided to construct a line of railway across British North Borneo, according to latest London advices. The line will form a continuous connection between the E. and W. coasts, and, when completed, will be of a total length of 250 ms. The extension will commence at Tenom, 90 ms. from Jesselton, the principal coastal terminus on the China Sea, and, traversing some of the most valuable timber lands of British North Borneo, will terminate at Cowie Harbor, on the E. coast. The extension is estimated to cost ₱1,500,000, and will be constructed in sections. It is intended to grant to the company which is to be formed to carry out this scheme alternate blocks of land, each 40 sq. ms. in extent, which can be utilized for rubber, tobacco, etc. A considerable portion of the line, which runs close to the Dutch boundary, will traverse country inhabited by some of the wildest tribes of these regions.

Locomotives for China.—For working traffic over the Shanghai-Nanking Railway, Messrs Robert Stephenson & Co., Ltd., of the Springfield Works, Darlington, are now completing 10 powerful 4-coupled bogie locomotives, to the specifications of Messrs. Sir John Wolfe Barry and Partners. These locomotives, the first lot of which have already been shipped from Middlesbrough, are built for the 4′8½″ gauge, have been constructed upon American lines, and are of very liberal dimensions, as the width over the platforms is no less than 9′. The cylinders are 18x26″ with ordinary "*D*" slide valves between the frames, operated by the simple Stephenson link motion reversed by a wheel and screw on the left hand side of the engine. The four coupled wheels have a diameter of 6′7″, and the bogie wheels a diameter of 3′6″, the fixed wheel base being 8′3,″ and the total wheel base 25′2″. The boiler barrel has a maximum outside diameter of 4′10⅝″, and a length between tube plates of 13′6″ the length of the fire-box shell being 9′ (outside). The working pressure of the boiler is 180 lb. per sq. in. The boiler is fitted with brass tubes, each 2¼″ in diameter, giving a heating surface of 1,467.39 sq. ft., whilst the fire box provides an additional 162 61 sq. ft., the total heating surface therefore being 1,630 sq. ft. The grate area is 28 sq. ft., this being to allow of the use of inferior coal. The engine is fitted with the Westinghouse quick-acting brake, the pump being fixed on the right hand side of the smoke box. The 4-coupled wheels of the engine and the tender wheels only are braked. The engine and tender have an aggregate weight on rails of 98 tons 7 cwts.

ELECTRIC LIGHTING, TRACTION POWER, ETC.

Shanghai-Manila Cable.—The Shanghai-Manila submarine cable, the laying of which by the steamer *Silvertown* required about 11 days, has been completed.

Wireless Telephone, Japan.—According to a telegram from Tokyo to Shanghai a naval engineer named Kimura has succeeded in inventing a wireless telephone.

Boom in Electric Railways in Japan.—According to *The Japan Chronicle*, there is about to be a boom in electric railways in Japan to the detriment of steam-power lines.

Electric Railway for Kobe.—The Kobé Assembly having agreed that a charter be granted to a private company, the syndicates formed for the purpose of carrying electric railways into the city will be incorporated into one body. It is expected that the company will draw its motive power from the Kobé Electric Light Company.

Injunction Not Sanctioned, Manila.—Recently a Manila merchant brought injunction proceedings against the City of Manila to prevent it from entering into a contract with the Manila Electric Railroad and Light Company covering the repair of streets by the municipality which are torn up for the laying of street railway rails. The court held that the city had a perfect legal right to make the contract.

Messrs. Riley, Hargreaves & Co., Ltd., Singapore.—This well-known Singapore contracting firm has secured another order for the installation of a complete electric lighting plant in a rice mill in Saigon. The work includes the supply of high-speed engine, dynamo and arc lamps as well as all cables, lighting, fittings, and fans. This contract makes the third electric generating plant which Messrs. Riley, Hargreaves & Co. have undertaken for rice mills in Saigon quite recently.

WATERWORKS AND IRRIGATION

Waterworks at Wuchang.—Actual work in this improvement has been commenced. The construction is in charge of a German civil engineer who is receiving a salary of $1,200 per month for his services.

Gravity Water Supply, Manila, P. I.—The Atlantic, Gulf and Pacific Company, of New York City and Manila, has begun the construction of the tunnel in the new gravity water supply system for the City of Manila, at Station 260, about 5 ms. from El Deposito and 1/3 of the distance to the new base of water supply something like 3 ms. beyond Montalbon at the headwaters of the Mariquina River. The track between Montalbon and El Deposito, a distance of about 18 ms., is practically completed and the contractors, the Matson-Lord-Belser Company, are ready to finish the dam and reservoir so soon as materials arrive, which will be shortly.

Tientsin Native City Water Supply.—The sales of water by the Tientsin (N. China) Native City Waterworks Company, Ltd., during 1905, show a great increase over 1904. The total receipts amounted to Tls. 37,110.31 against Tls. 20 639,74, an increase of 82 per cent. The total galls. delivered in 1905 was 97,284,912 against 47,064,454 in 1904. The profits on this item amount to Tls. 56,490 57 against Tls. 1,456 03 in 1904, an increase of over 100 per cent. The capacity of the plant is about 1,000,000 galls. in 24 hrs. During 1905 13,363′ of new mains were laid, bringing the total length of mains up to 96.845′, or about 16 ms. Forty-nine new private installations were made during the year, the most important being for supplying the Imperial Chinese Railway, the provincial mint of the viceroy, the *yamen* of the viceroy, and a 5″ main for the Japanese Concession. Altogether the company has now 143 private installations. In order to secure an uninterrupted connection with the districts E. of the Peiho, which districts were formerly supplied with a 12″ main only, crossing the river N. of the Austrian Bridge, a new 12″ main has been laid This crosses the Grand Canal, passes the Lutai Canal, and connects there with the company's mains in the Austrian Concession, thus making a complete circuit of the Eastern Extension of the city.

BUILDINGS

New Market for Singapore.—It is proposed to construct a new market at Tanjong Katong, Singapore.

Tan Tock Seng Hospital, Singapore.—The tender of Messrs. Howarth, Erskine, Ltd., of Singapore, of $69,743 for the construction of foundations in connection with the new Tan Tock Seng Hospital at that place, has been accepted.

School Buildings, Philippine Islands.—The government has awarded contracts for the erection of school buildings in Iloilo, Panay, and Bacolod and Dumaguete, Negros. A provincial high school and a manual training school will be constructed at Iloilo of native hard wood, the former to cost -P-28,450 and the latter -P-13,600. These contracts have been let to the Manila Saw Mills Company. An intermediate school will also be built at Iloilo to cost -P-14,459.86, the material to be of native hard wood and Oregon pine. The buildings in Negros will be constructed by the Manila Saw Mills Company, one to cost ₱25,850 and the other ₱26,350. Native hard wood will be used in both structures.

PUBLIC WORKS

Public Property Improvements, Pahang, F. M. S.—For the current year $77,100 have been set aside for the improvement and repair of public property in the States of Pahang, F. M. S.

Road Improvements, Pahang, F. M. S.—The State of Pahang, F. M. S., will spend the following sums on roads during the year:—Cart road trace, Lipis to Kuantan, $20,000; metalling Batu Talam-rd, $10,000; replacing temporary bridges by permanent ones, $20,000; Bentong-Telemong-rd, $100,000; Ginting Sempak-Bentong-rd, $100,000; Blat-rd to Lepar Watersheds, $50,000.

New Sewer System, Manila, P. I.—The contractors have begun the construction of the new sewer system for the City of Manila. At the outlet on Tondo Beach, where the main pipe connects with the bay, excavations are being made preparatory to the installation of the large pumps which are to drain off the surface water and prepare that section for the extensive work laid out for the installation of the great system. There will be a sub-station at the corner of Calles Azcarraga and Arranque, and another at Plaza Santa Ana. On the opposite side of the Pasig River there will be secondary pumping stations along the main pipe at the corner of Calles Nozaleda and Bagumbayan, Calles Herran and Nueva, Malate, and at the Paco Estero.

PORT WORKS, DREDGING, DOCKS, ETC.

Steel Wharves, Manila.—Bids for the materials and construction of the two steel wharves for the new harbor, Manila, have been opened. The Atlantic, Gulf and Pacific Company, of New York City and Manila, were the lowest bidders, the tenders ranging from -P-900,000 to -P-1,250,000. The other bidders were the Milliken Bros of New York City, the Cotton Bros. and Healey, Tibbets & Co., of San Francisco, (bids mailed in), and Salvador Farre, now constructing the Santa Monica sewer. The work contracted for must be completed within 20 mos, and when they are finished the wharves will have a deck surface of 12,500 sq. yds.

Whangpu Conservancy.—According to *the Universal Gazette*, Mr. J de Rijke has written to the Chinese authorities, from Shanghai, to the effect that he will accept the engineering duties of the conservancy of the Whangpu under the following conditions:—(1) He will be engineer-in-chief of the work; (2) he will receive a salary of £3,000 per year; (3) the offices and his residence with six rooms provided with furniture complete shall be supplied by the Chinese Government; (4) if any engineers be employed, either at the recommendation of himself or other parties, such engineer shall be examined by the engineer-in-chief before employment; (5) the term of the agreement shall be 5 yrs. from the date of the arrival of the engineer-in-chief in Shanghai.

BRIDGES

Ayala Bridge, Manila.—The Atlantic, Gulf and Pacific Company is making rapid headway on the reconstruction of the approaches to the Ayala Bridge. It is expected that when completed they will be highly ornamented highways.

New Canal Bridge, Manila.—A new bridge will be erected in Calle Moriones, Manila, in the near future. The present structure across the canal at this point is in a dangerous condition. The city engineer has been instructed to include the funds for the construction of the bridge in his next estimate for appropriations.

SHIPBUILDING, MARINE, ETC.

Steamer "Limao".—The new steamer *Limao*, built for the new French Yangtsze Line, has made her first trip up the river, from Shanghai.

"Kaijo-maru's" Trial Trip.—The steamer *Kaijo-maru*, which has been built at the Kawasaki dockyard, Kobé, for the Osaka Shosen Kaisha, was taken on her trial trip recently, and attained a speed of 14.65 knots per hr She is of 2,100 tons displacement, for 20 1st-class, 30 2d-class, and 272 3d-class passengers.

Repairs to Transport "Seward."—The Hongkong and Whampoa Dock Company, Hongkong, represented in Manila by Messrs. Findlay & Co., was recently awarded the contract for the repair of the U. S. A. T. *Seward*. The successful company's bid was $14,400, the work to be completed in 15 days.

Floating Mines in the Yellow Sea.—The Chinese Government has taken steps for the discovery and destruction of floating mines in the Yellow Sea between Shanghai and the ports of N. China. This action was taken at the instance of the Diplomatic Corps at Peking and representatives of commercial bodies.

New Coaling Facilities, Japan.—The Brown Hoisting Machinery Company of Cleveland, O., has sold, erected, and put into operation for the Kyushu Railway Company, at Tobata, in the Harbor of Wakamatsu, situated at the W. outlet of the Straits of Shimonoseki, two steam-hoisting machines of the Gantry crane type of 8,000 tons daily capacity, for the purpose of delivering coal from cars into seagoing vessels as cargo.

Launch of "Dona Francisca," Manila, P. I.—The new coastwise steamer *Doña Francisca* was launched recently at the shipyard of the San Nicolas Iron Works, Manila. The new vessel is a sister ship of *Juan Rodriguez*, at present under charter of the Quartermaster's Department of the army. She was built from the designs of her owner, Señor Juan Rodriguez, and is a ship of 550 tons displacement. She is 150′ in length, has a beam of 24′, and a depth of 13′.

Huge Shipping Corporation, Japan.—The following lines of the Japanese Shipowners' Association have coöperated their interests:—Kobé-Otaru-Saghalien; Yokohama-Moji; Yokohama-Muroran Kushiro; Osaka-Korea; Kobé-North China; Yokohama-North China; Kobé-Vladivostock; Kobé-Dairen; Kobé-Formosa; Kobé-Shanghai; Chefoo-Vladivostock; Yokohama-Philippine Islands; Japan-China-India. The new company will have 132 liners, with an aggregate tonnage of 282,747.

Manila-Japan Steamship Line.—According to *The London and China Express*, a steamship line, financed in Japan, is to be inaugurated between Manila and Japanese ports. One of the promoters of the enterprise is Señor Don Raphael de Castro Midalgo, of Manila, who is now in England to purchase six steamships having a gross tonnage of about 2,000 tons each. The service that it is proposed to establish will be a triweekly one. Yokohama will be the main Japanese port of the line, and calls will also be made at Kobé and Nagasaki.

MINES AND MINING

Gold Exports, British Guinea.—The gold export from this country in 1905 amounted to 104,887 ozs. as against 90,709 ozs. in 1904.

Mineral Deposits, Manchuria.—The Governor-General of Mnkden is coöperating with the Japanese in their work of opening up the mineral resources of Manchuria, be heading an internal loan with this object in view.

Minerals in Hongkong.—Important mineral deposits are to have been discovered in new British territory on the Chinese mainland opposite to the City of Victoria. Among other unsuspected hidden treasures on the Kowloon shore, great pockets of iron ore have been uncovered.

Copper and Lead, Yunnan.—The Minister of Mines in Yunnan has been directed to supply more copper and lead to the Chinese Government from the mines in his province, as the supply in hand is inadequate. He is required to provide 5,000,0.0 *catties* more annually than at present.

Royalty on Gold, Pahang, F. M. S.—In view of the fact that the gold-mining industry in Pahang has had a very lean year, the 1905 exports of 9,661 ozs. being the lowest record for over a decade, the rule under the Customs Enactment just made continues the reduced rate of royalty.

Copper and Lead, Yunnan.—The Minister of Mines in Yunnan has been directed to supply more copper and lead to the Chinese Government from the mines in his province, as the supply in hand is inadequate. He is required to provide 5,000,000 *catties* more annually than at present.

Anhui Mining Concession, China.—The Peking officials who are natives of Anhui are memorializing the Wai-Wu-Pu to approach the Throne regarding the cancellation of the British contract for mining privileges at Tung-kuan-shan in Anhui, as the time has long since expired for them to be worked and nothing has been done, so that the gentry and merchants are protesting.

Petroleum Production in Burma.—The total production of oil in Burma in 1905 was 115,903,804 galls., or about 30,500,000 galls. in excess of that in 1904. A sign of the development of the Burma oil industry is the inclusion in the licenses to prospect for oil of new conditions providing for the supply of oil for the requirements of the British Admiralty, and for the refining of oil for British warships.

Mining in British New Guinea.—The mining outlook in British New Guinea is reported to be not encouraging. One company, in 1904, crushed 11,978 tons for a return of 3,808 ozs.; another company crushed 4,388 tons for 3,388 ozs., of an average value of £1 5s 3d per oz. But what appears to be a rich field has been discovered near Suloga Bay, on Woodlark Island. In his latest annual report the administrator, Captain Barton, states that 65 tons of ore taken from one claim yielded 599 ½ ozs of gold, which is equal to 9 ozs. 4 dwts. 12 grs. per ton. Whether the rich character of the output can be maintained remains to be demonstrated.

Indian Gold Mining Returns.—The following are the returns for the month of February, 1906:—*Balaghat*, 4,200 tons of quartz crushed yielded 3,368 oz. and 2,750 tons of tailings cyanided yielded 275 oz., making a total of 3,643 oz. of gold.—*Champion Reef*.—Milled 16,990 tons which produced 12,707 oz., 15,975 tons of tailings treated by the cyanide process produced 2,179 oz. and scrapings from plates. No. 2 mill, 1,500 oz., making a total production of 16,386 oz. of gold. *Hutty Nizam's*.—768 oz. from 1,850 tons of quartz crushed and 270 oz. from 1,850 tons of tailing cyanided, making a total of 1,038 oz. of Gold estimated value Rs. 59,500. *Mysore*.—15,150 tons of quartz crushed produced 14,740 oz. and 12,750 tons of tailings cyanided yielded 1,736 oz., making a total production of 16,477 oz. of gold. *Mysore West*.—Mill ran 571 hrs., crushed 1,395 tons and yielded 840 oz. bar gold, cyanided 2,016 tons of tailings yielded 120 oz standard gold. Total production 960 oz. of gold. *Nundydroog*.—6,200 tons of quartz crushed yielded 4,964 oz. and 6,480 tons of tailings cyanided yielded 579 oz., making a total production of 5,543 oz of gold. *Ooregum*.—Staff crushed 9,696 tons, gold produced 4,627 oz. and slimes and tailings cyanided yielded 10,083 oz., making a total return of 5,529 oz of gold.

MISCELLANEOUS NOTES

Netherlands Trading Society.—The Netherlands Trading Society intends to open an agency in Hongkong.

Sugar Exports, British Guiana.—The sugar exports from this country in 1905 amounted to 133,000 tons, as against 108,000 tons in 1904.

Chinese Miscellany.—Needles, bar soap, candlet and looking-glasses are in great demand throughous China. The present supply is greatly inadecuate to the demand.

New Enterprises, China.—During 1905 62 new commercial undertakings were registered by the Chinese Government, being an increase of 53 over those registered in 1904.

Opening of Chengtu, China.—The viceroy of Szechuan Province, China, has recommended that the opening of Chengtu be postponed till the railways of the province are built.

Knitting Machinery Needed in Japan.—As the Japanese are rapidly becoming weavers of knitted goods, there promises to be a splendid field there for the sale of knitting machinery.

Big Arsenal in Japan.—The construction of an arsenal for Messrs Armstrong & Co. has been commenced at Hiratsuka, Sagami Province, Japan. The cost is estimated at -Y- 50,000,000.

Kuala Selangor (F. M. S.) Oil Mills.—It is stated that these mills are now doing exceedingly well financially, and that they are to be turned to further use, *viz:* for the manufacture of coir rope.

Concrete Apparatus.—Mr. J. E. Hall, engineer, of 5 Grange-rd, Singapore, has been authorized to file a specification of an invention for an apparatus for the purpose of making and placing in position piles or columns of concrete or other suitable material.

Siam Electricity Company, Ltd., Bangkok.—The gross profits of this company for 1905 were Tcs. 880,909.45, and the net profits Tcs. 592 908.83. Adding to this the balance for 1904 (Tcs. 23.103 70) the total sum at the disposition of the company is Tcs. 616,011.53.

Cold Storage for Bangkok.—Mr. C. G. Edwards, who returned recently to Bangkok from England, has made arrangements, in connection with the Oriental Hotel Importation Company, for the establishment of cold storage transit to, and cold storage in, Bangkok.

Oil Trade, Philippine Islands.—British consul at Manila states that practically the whole of the oil trade of the Philippine Islands is divided between the United States and Russia, and consists of kerosene and other oils. Their respective imports during 1905 were United States £84.790 and Russia £70,092.

Yalu Timber Company.—Some twelve native timber merchant firms have petitioned Viceroy Yuan for the establishment of timber company in co-operation with the Japanese on the right bank of the Yalu River, with a capital of Tls. 1,000,000. This has been sanctioned, and 10,000 shares of 100 taels each are to be raised, and the subscription is now open inviting subscribers.

Gold and Silver Paper Mill, Shanghai.—Mr. Li Sh'san, a millionaire merchant of Shao-hing-fu, Province of Cheliang, China, is establishing near Shanghai a factory for the manufacture of gold and silver paper. He has engaged the services of Professor Okubo of the Tokyo Technical College, as chief engineer of the industry, and a paper machine of the professor's own invention will be installed.

Messrs. W. F. Stevenson & Co., Manila, Iloilo, and Cebu, P. I.—This wellknown firm is in a favorable position to fill indents for various kinds of goods, such as rubber goods, leather, machinery, agricultural and otherwise; furniture, safes, metals, printing and other paper, hay, oats, corn, etc., etc. Orders will be filled promptly, and at the lowest possible prices, and the firm guarantees satisfaction. The head office of Messrs. W. F. Stevenson & Co., is in Manila.

Rice Factories, Burma.—Nine new rice mills were built in Burma in 1905, four in Rangoon and the rest in the Lower Burma districts. There are now 202 factories in Burma under the operation of the Factories Act, 1881. More than ½ of these are in Rangoon. The total number of operatives employed increased from 32,345 to 31,970, of whom 21 035 were employed in Rangoon Town. Their health and treatment were reported to be satisfactory except in the government press, Rangoon, where the conditions of work were unfavorably criticized.

Standard Oil's Island in China.—The customs taotai of Amoy was recently impeached by officials in Peking for mortgaging a small island in the vicinity of Amoy to the Standard Oil Company of New York for storage of kerosene oil. The American consul-general at Foochow has, it is reported, refused to return the island on the ground that the company has already built oil tanks and other structures thereon. The Chinese director-general of railways in Fo-kien Province insists on recovering the island on the pretention that it is needed for railway purposes.

Farm Machinery, San Ramon, Mindanao, P. I.—The agricultural farm at San Ramon, Mindanao, which is under the management of the Government of the Moro Province, is proving its value under the direction of Captain White, U. S. Army. It is now equipped with a copra-drying kiln and a machine for shredding the husks of cocoanuts, which equipment is rapidly proving the advantages of modern methods in the cultivation and preservation of the cocoanut. The main purpose of this farm is to provide cocoanut and hemp seed of the best quality adapted to that district.

Machinery in Manchuria.—The prospect of introducing some simple type of hand-power woodworking, cotton spinning and weaving, rope-making and silk-weaving machinery into Manchuria is fairly inviting at the present time, but until the mines and industrial enterprises are exploited machinery on a large scale will not be in extensive demand. In N. Manchuria flouring mills have been successfully established by the Russians, and in the extracting of oil from beans, particularly in S. Manchuria, large numbers of hand presses are used.

Luzon Sugar Refining Company, Ltd., Hongkong.—Messrs. Jardine, Matheson & Co., general agents of this company, in their annual report to the directors state that work was commenced in the refinery at Malabon, P. I., in April, 1905. The decline in the value of sugar all over the world adversely affected the price obtainable for refined product in Manila, and the loss on working, including $17.983 expenses incurred in restarting the refinery, amounted to $26,692.47, increasing the sum at debit of profit and loss account to $132,588.10. Messrs. A. G. Wood and H. P. White have been reelected members of the consulting committee.

Lumber for the Orient.—Henry Hewitt, Jr., the largest individual owner of timber lands in the State of Washington, U. S. A., has organized a company to build one of the largest lumbering plantf in the state. The lumber and timbers turned out will be cut with special reference to the needs os Chinese builders. Several wealthy Chinese of Shanghai are stockholders in the concern, and will manage the distribution of lumber at Shanghai, Hankow, Canton, Amoy and other cities. The company intends to operate its own line of lumber-carrying steamships, and it will require 2 yrs. to consumate the present plans and establish lumber yards throughout China.

FINANCIAL NEWS

China Borneo Company.—The profits of this company for 1905 amounted to $20,848.27.

Hongkong Rope Manufacturing Company, Ltd.—This company has declared a dividend of $9 per share.

Japanese Loan to Korea.—The Crédit Mobilier of Japan has signed the contract for a -Y-10,000,000 industrial loan to Korea.

Kiangsi Railway Bank, China.—Headquarters of the Kiangsi Railway Bank are to be established at Kiukiang, with branches at Shanghai, Hankow, and Newchwang.

Yangtsze Wharf and Godown Company, Ltd.—The statement of accounts for 1905 of this company, whose paid-up capital is Tls. 250,000, shows a divisible balance of Tls. 75,998. A dividend of 18 per cent has been declared.

Straits Settlements Syndicate, Ltd.—The Straits Settlements Syndicate, Ltd., has been registered in London with a capital of £2,000 in £ shares, to carry on the business of bankers, capitalists, financiers, etc. There is no initial public issue.

Cotton Spinning Combine, Japan.—Through the efforts of Baron Shibusawa and Mr. Iida Giichi, arrangements have been made for the amalgamation of the Osaka Spinning Company, the Mie Spinning Company, and the Osaka Calico Factory.

Shanghai and Hongkew Wharf Company, Ltd.—During 1905 this company issued 6 per cent debentures to the amount of Tls. 190,600, and the total liabilities at the end of the year were Tls. 734,500. A final dividend at Tls. 8 per share, absorbing Tls 256,000, has been declared.

National Bank of China, Ltd., Hongkong.—The gross profits of this institution for 1905, including $41,768 26 brought forward from the previous year, were $305,257.76. The bank will continue its exchange business and untill the reserves are built up to $600,000 no dividend will be declared.

Yangtsze Insurance Company.—Messrs. Shewan, Tomes & Co., Hongkong agents of this company, have been notified that the company will pay a dividend of 20 per cent, a special dividend of 5 per cent, and add $50,000 to the reserve fund as a result of the business during the past year.

China Light and Power Company, Ltd., Hongkong.—The gross profits of this company for the year ended February 28th amount to $68,081.09, and the net profits, including the amount brought forward from the previous year, and allowing for depreciation and payment of interest and other charges, amount to $31,219.89, which it is intended to appropriate as follows:—To pay a dividend of 6 per cent, $30,000; to carry forward to current year's account, $1,219.89.

Industrial Bank of Japan.—Concerning the investment of capital in this bank by foreigners, the plan is to induce leading financiers abroad to have direct interest in the bank by becoming shareholders to the extent of -Y-7,500,000 out of -Y-17,500,000. The authorized capital is -Y-10,000,000, divided into 100,000 shares of -Y-100 each, and it is intended to alter these shares into -Y-50 shares, making the total number of shares owned by the Japanese 200,000. Over this, -Y-7,500,000 capital, divided into 150,000 -Y-50 shares, is to be increased and owned by foreign capital. By this arrangement the bank becomes an international institution.

Hongkong Ice Company, Ltd.—The 25th ordinary annual meeting of the shareholders of this company was held recently at the office of the general managers, Messrs. Jardine, Matheson & Co. The chairman, the Hon. Mr. C. W. Dickson, said:—"Our sales of ice, both to steamers and for private consumption, were larger than during 1904, and revenue derived from cold storage also shows a satisfactory increase. To meet the demands of this branch of our business an addition store was installed during the yr. and the completion of another, making five in all, is about to be undertaken. Seven new ice boxes are now in course of erection. Mr. Thos. Arnold was reelected auditor for the current yr.

China and Manila Steamship Company, Ltd.—The annual report of the general managers of this company, Messrs. Shewan, Tomes & Co., Hongkong, for 1905, shows that the net profit was $46,563.45, which has been appropriated as follows:—To reserve fund, $1,000; to pay a dividend of $1.50 per share, $39,000; to current year's account, $6,563.45. The two steamers *Rubi* and *Zafiro* ran regularly during the year. Cargo was scarce and freights ruled low, but expenses were reduced in every possible way, with the result that the profit on working account was a few thousand dollars better than that of 1904. Messrs. N. A. Siebs, D. E. Brown, H. P. White, and A. V. Apcar retired as members of the consulting committee and were reelected.

Yokohama Specie Bank, Ltd.—The gross profits of this bank for the half-year ended December 31st, 1905, including -Y-609,720,708 brought forward from previous accounts, amounted to -Y-10,532,084.708 of which -Y-7,213,063.048 have been deducted for current expenses, interest, etc., leaving balance of -Y-3,318,115.338. By the addition of -Y-360,000 to the reserve fund, the latter is raised to -Y-10,200,000. -Y-1,000,000 have been appropriated as a newly created special reserve fund, and -Y-200,000 placed to the silver funds. From the remainder a dividend at the rate of 12 per cent, which will absorb -Y-720,000 on old shares and -Y-360,000 on new shares (total, -Y-1,080,000), has been declared; and the balance, -Y-688,116.338 has been carried forward to current account.

China Sugar Refining Company, Ltd., Hongkong.—Messrs. Jardine, Matheson & Co., general agents of this company, report that at the end of 1905, inclusive of $42,812.75 brought forward from 1904, the sum at credit of profit and loss account was $1,405,479.68. Deducting the interim dividend of 10 per cent paid August 18th last, $1,205,419.68 was available for appropriation, and this sum was dealt with as follows:—Final dividend of $15 per share, $300,000; transfer to reserve fund, $850,000; to bonus to European staff, $15,000; carried forward, $40,419.68. The steady fall which occurred during the year in values of raw sugar and the uncertainty as to the future course of prices, rendered it necessary to provide a large sum against forward purchases, hence the transfer of $850,000 to the reserve fund, which will be used for the purpose of writing down such commitments.

Tarlac (P. I.) Tramway Company, Ltd.—The prospectus of this company was recently issued. The company is founded for the purpose of building and operating a steam tramway line from Paniqui to Camiling in the Province of Tarlac, N. Luzon, P. I. It is regularly incorporated under the laws of the Philippine Islands with a capital stock of ₱150,000, Philippine currency, divided into shares of ₱100 each. The franchise indicates the right-of-way as being from the Manila & Dagupan Railway station in Paniqui, through the barrios of Salomague, Cabayaunsan, Aduas, Barang, Mabilog, Mariui, Matubog, and Nibalio, to the town of Camiling. The tramway will be a narrow-gauge line (with the option of increasing the gauge), and will pass through some of the finest rice-producing country in the Philippine Islands. As shown by the report of the company's engineers the proposed tramway is to be 12¼ ms. long, and it is estimated that the entire line can be built and equipped for service for ₱125,788. It is calculated that the operating expenses of the road will not exceed ₱24,000 *per annum*. About 24,000 tons of freight and 36,000 passengers will probably be handled during this period. This line will be constructed by the Manila Construction Company, of which Mr. H. C. Thurber, C. E., is manager.

Japanese and Eastern Corporation, Ltd.—The details of this new investing undertaking, which has been floated in London for the purpose of establishing a general financial and trust business for the investment of capital in Japan and the Far East generally, but mainly to aim at obtaining the financing of important schemes and undertakings, such as docks, tramways, etc., are as follows:—The issue has been made of £1,000,000 5½ per cent profit-sharing perpetual debenture stock, at a premium of 5s. per £ stock. The holders of perpetual debenture stock will be entitled to 5½ per cent cumulative interest on the amount paid up on the stock, and, in addition thereto, to a sum equal to one moiety of the balance of net profits available for dividend in any one year after the payment of such 6½ per cent and after a sum not exceeding 10 per cent of the net profits has been set aside for a reserve fund. The other moiety will be available for dividends on the ordinary shares. The nominal capital of the company is £50,000 divided into 50,000 ordinary shares of £1 each, 30,007 of which have been allotted. The debenture stock now offered for subscription will be insured in the Norwitch Union Life Insurance Society, by means of a capital redemption policy securing the repayment, in full, of the premium, in addition to the full face value of the stock—that is, £1 5s. for each £1 of stock subscribed.

Messrs. Riley, Hargreaves & Co., Ltd., Singapore.—The seventh ordinary meeting of this company was held recently in Singapore. There were present at the meeting Mr. W. M. Robertson, managing director and chairman, and Mr. C. E. F. Sanderson, director; Mr. T. C. B. Miller, secretary; the Hon. W. J. Napier, and others. The secretary read the minutes calling the meeting, and the minutes of the last ordinary meeting, which were confirmed and signed. The minutes of an extraordinary general meeting, held June 30th, 1905, were also confirmed and signed. The report on the accounts for 1905 having been taken as read, the chairman said that he had been prepared to make a few remarks giving further particulars, but that, having received from an influential shareholder a letter giving notice of certain questions to be asked at the meeting he thought that if these questions, and the directors' replies to them were now given, any information desired by the shareholders would be best afforded thus. He therefore invited the Rev. Father Couvreur to put those questions, which was done. The chairman then gave the information required as to certain items in the accounts, and Father Couvreur expressed himself as being in the main satisfied and appeared to think that the company's affairs were in better condition than shown. The accounts were then put to the meeting, and, after a little discussion, adopted. Mr. Jackson Millar, retiring by rotation, was re-elected to a seat on the board and Mr. J. van Lohuizen was elected a director of the company. Messrs. Gunn & Co. and W. Buchannan Smith were re-elected as auditors. A vote of thanks to the chairman terminated the meeting.

FAR EASTERN SHARE QUOTATIONS

Courtesy of Benjamin, Kelly & Potts, Sharebrokers, Hongkong, April, 1906.

STOCK	WHEN ESTAB-LISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN PAID	Approximate Return at Present Quotation*	CLOSING QUOTATIONS
											PER CENT	
Banks.												
Hongkong and Shanghai Banking Corporation	1865	$10,000,000	80,000	$125	$125	*g* £1,000,000 *s* $9,500,000 *i* $250,000	$1,699,777	31-12-05	£1.15/- div & £1 bonus @ ex. 2/0-9/16 $26.87 for second half-year 1905	26 2-06	5	$850 buyers London £87½
National Bank of China, Limited	1891	£699,475	99,925	£7	£5	$200,000	$41,768	31-12-04	$2 (London 3/6) for 1903	1-2-04	—	$40 buyers
Marine Insurances.												
Canton Insurance Office, Limited	1881	$2,500,000	10,000	$250	$50	$1,600,000 *j* $147,895	$211,540	31-12-04	$20 for 1904	21-10-05	6	$355 buyers
China Trader's Insurance Co., Ld.	1865	$2,000,000	24,000	$83.33	$25	$950,000 *f* $169,215 *j* $202,455 *u* $296,955	Nil.	30-4-05	$4½ for year ended 30-4-1905	18-12-05	4¾	$97
North China Insurance Co., Ld.	1863	£150,000	10,000	£15	£5	*g* £100,000 *s* Tls. 100,000 *f* Tls. 50,000	Tls. 302,053	30-6-05	Final of 7/6 making 15/- for 1904	25-10-05	5½	Tls. 90 sales
Union Insurance Society of Canton, Limited	1867	$2,500,000	10,000	$250	$100	*s* $2,000,000 *g* £40,000 *f* $331,453 *j* $1,043,930 *u* $1,152,346	$2,339,112	30-6-05	$40 for 1904	20-10-05	5	$795 sellers
Yangtsze Insurance Association, Ld.	1862	$800,000	8,000	$100	$60	$750,000 *i* $50,000 *j* $5,890	$599,364	31-12-04	$12 and $3 special dividend for 1903	12-4-05	7¼	$177½ buyers
Fire Insurances.												
China Fire Insurance Co., Ld.	1870	$2,000,000	20,000	$100	$20	$1,000,000 *x* $229,488 *f* $2,616	$344,098	31-12-05	$6 for 1904	9-3-06	7	$86 buyers
Hongkong Fire Insurance Co., Ld.	1868	$2,000,000	8,000	$250	$50	$1,221,928	$422,618	31-12-05	$25 for 1904	8-3-06	8¼	$300
Shipping.												
China and Manila Steamship Co., Ld.	1882	$750,000	(*1*) 30,000	$25	$25	$6,000	$6,563	31-12-05	$1½ for 1905	15-3-06	8	$18 sales
Douglas Steamship Co., Ld.	1883	$1,000,000	20,000	$50	$50	$261,638 *i* $88,941	Nil.	30-6-05	$3½ for year ended 30-6-1905	25-9-05	8½	$41 buyers
Hongkong, Canton and Macao Steamboat Company, Ld.	1865	$1,200,000	80,000	$15	$15	*e* $250,000 *d i* $600,000 *f* $145,331	$24,080	31-12-05	$1 for second half-year 1905	16-2-06	8¼	$25 sellers
Indo-China Steam Navigation Company, Ld.	1882	£1,200,000	(*2*) 60,000	£10	£10	£120,000 *i* £241,150 *h* £3,999	£4,435	31-12-04	12/- @ 1/10 ⅞=$6.29.51 for 1904	13-7-05	6¾	$93½ buyers
Shanghai Tug and Lighter Co., Ld. Do. Preference	1903	Tls. 1,500,000	200,000 100,000	Tls. 50	Tls. 50	*i* Tls. 40,000	Tls. 23,156	31-12-05	Final of Tls. 3. making Tls. 5 for 1905 Final of Tls. 1¾ making Tls. 3½ for 1905	13-3-06	8½ 7	Tls. 58 buyers Tls. 50 buyers
"Shell" Transport & Trading Co., Ld.	1898	£2,000,000	2,000,000	£1	£1	£400,000 *i* £4,144	£7,815	31-12-04	1/- (Coupon No. 6) for 1905	1-1-06	4¼	24/- buyers
"Star" Ferry Co., Ld	1898 1900	$200,000	10,000 10,000	$10 $10	$10 $5	$65,000 *i* $24,257	$929	30-4-05	$1.80 90 cents for year ended 30-4-1905	29-5-05	5¾ 4	$32 $23
Taku Tug & Lighter Co., Ld.	—	T.T 1,500,000	30,000	Tls. 50	Tls. 50	Tls. 98,000 *d* Tls. 350,479 *e* Tls. 48,000 *i* Tls. 81,200	Tls. 13,913	31-12-05	Final of Tls. 2 making Tls. 4 for 1905	1-3-05	11½	Tls. 35 buyers
Refineries.												
China Sugar Refining Company, Ld.	1878	$2,000,000	20,000	$100	$100	$850,000 *e* $450,000 *r* $86,129	$40,419	31-12-05	Final of $15 making $25 for 1905	22-3-06	14	$180 buyers
Luzon Sugar Refining Company, Ld.	1882	$700,000	7,000	$100	$100	none	$85,987	31-12-04	$3 for 1897	24-3-98	—	$35 sellers
Perak Sugar Cultivation Co., Ld.	—	Tls. 350,000	7,000	Tls. 50	Tls. 50	Tls. 100,000	Tls. 3,723	31-7-05	Tls. 2½ for year ending 30-9-1904	17-12-04	—	Tls. 10 Sales
Mining.												
Chinese Engineering & Mining Co., Ld.	1901	£1,000,000	1,000,000	£1	£1	*d* £80,000 *h* £12,289	£13,355	28-2-05	Final of 1/- (No. 5)	2-11-05	—	Tls. 10
Oriental Consolidated Mining Co., Ld.	1901	G.$5,000,000	*y* 500,000	G. $10	G. $10	none	G. $909,050	30-6-05	Final 50 cts. mak. G.$1 for 1905	21-12-05	—	G. $16
Raub Australian Gold Mining Co., Ld.	1892	£200,000	150,000 50,000	£1 £1	18/10 £1	£4,873	£8,745	31-3-05	No. 12 of 1/-=48 cents	28-7-01	—	$3½

STOCK	WHEN ESTAB-LISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN PAID	Approximate Return at Present Quotation * PER CENT	CLOSING QUOTATIONS
Docks, Wharves and Godowns.												
Farnham (S. C.), Boyd & Co., Ld	1901	T5,520,000	55,200	T100	T100	T1,000,000	.........T34,924	30-4-05	Interim of Tls. 4 for year 1905-6.	6-1-06	10	T118½ buyers
Fenwick (Geo.), & Company, Ld........	1889	$450,000	z 18,000	$25	$25	$70,000	.... $8,915	31-12-05	$2 on old & $1 on new issue for 1905	12 3-06	9	$22½
Hongkong and Kowloon Wharf and Godown Co., Ld.	1886	$2,000,000	40,000	$50	$50	$550 000 d.r. $65,160 i $20,000	.........$20,040	31-12-05	Final of $3½ making $6 for 1905....	15-3-06	6	$100 buyers
Hongkong & Whampoa Dock Co., Ld.	1866	$2,500,000	50,000	$50	$50	$49,500	........$362,323	31-12-05	$6 for second half year 1905...........	27-2-06	7¼	$165
New Amoy Dock Co., Ld....................	1892	$67,500	10,000	$6¾	$6¾	$88,000	...........$2,221	31-12-05	$1 for 1905................................	1-3-06	6	$17 buyers
Shanghai and Hongkew Wharf Co. Lt	1902	T3,200,000	32,000	T100	T100	b T487,210 r T100,734	.........T57,065	31-12-05	Final of T8 making T14 for 1905	29-3-06	6½	T210 ex div.
Vulcan Ironworks, Ltd.	1905	T500,000	1,000	T500	T375	—	—	—	First year....................................	—	—	T375 buyers
Yangtsze Wharf and Godown Co., Ld..	1902	T250,000	2,500	T100	T100	T17,500	..........T2,762	31-12-04	T18 for 1904..................................	29-3-05	7¾	T230 buyers
Lands, Hotels and Buildings.												
Anglo-French Land Investment Company, Ltd....................................	1906	T2,500,000	(3) 25,000	T100	T100	—	—	—	First year	—	—	T100
Astor House Hotel Co., Ltd.	1901	$750,000	(4) 30,000	$25	$25	$14,156	...........$9,028	30-6-05	$2½ for year ending 30-6-1905......	19-8-05	8¼	$30
Astor House Hotel, Ld. (Tientsin)	—	T100,000	2,000	T50	T50	T34,000 e T8,000	.... T806	29-2-05	Interim of T5.....	21-10-05	8	T130 buyers
Central Stores, Ld............................	—	$451,845	6,000	$15	$15	—	..........$4,719	31-12-05	$2.40 on $12 for 1905..................	13-3-06	13½	$18
Do. (Founders')...............	—		123	$15	$12				None........	—	—	$300 buyers
Do. (New Issue)...............	1904		24,000	$15	$15				7°/₀ on $7½ for 1905....................	13-3-06	—	$15¼ buyers
Hongkong Hotel Co., Ld.	1866	$600,000	12,000	$50	$50	$648,975 r $24,071	.............$619	31-12-05	$5 for second half-year 1905..........	6-3-05	7½	$133 buyers
Hongkong Land Investment and Agency Co., Ld.	1889	$5,000,000	50,000	$100	$100	e $250,000	.........$67,839	31-12-05	Final of $3½ making $7 for 1905....	2-2-06	6	$115
Hotel des Colonies Co., Ld.................	1902	T225,000	9,000	T25	T25	n T20,986	.... T7,202	31-3-05	Interim of T1...............................	11-1-05	14	T17
Hotel Metropole Company, Limited	1904	$200,000	2,000	$100	$100	none	..........$4,699	30-6-05	Final of $6 making $10 for the year.	26-7-05	10	$100
Humphreys' Estate & Finance Co., Ld.	1887	$1,500,000	150,000	$10	$10	i $208,386 e $50,000	..........$5,070	31-12-05	80 cents for 1905..........................	12-2-06	7	$11½
Kowloon Land and Building Co., Ld. ..	1889	$300,000	6,000	$50	$30	none	............$574	31-12-05	$2½ for 1905...............................	7-2-06	6½	$39
Shanghai Land Investment Co., Ld......	1901	T2,600,000	52,000	T50	T50	T909,593 e T170,000	.... T52,194	31-12-05	Final of Tls. 3 making T6 for 1905	20-2-06	5	T117 buyers
Tientsin Land Investment Co., Ld.......	1902	T772,600	7,726	T100	T100	i T71,588	.... T385	31-12-05	Final of Tls. 5 making Tls. 8 for 1905	24-2-06	7	T110
West Point Building Co., Ld.	1889	$625,000	12,500	$50	$50	none	.... $772	31-12-05	Final of $1.90 making $3.65 for'05	2-2-06	7	$53
Cotton Mills.												
Ewo Cotton Spinning and Weaving Co., Ld.	1895	T1,000,000	(5) 20,000	T50	T50	T45,939	.......T100,000	31-10-05	T8 for year ended 31-10-1905..........	18-12-05	12½	T64 sellers
Hongkong Cotton Spinning, Weaving and Dyeing Co., Ld..................	1901	$1,250,000	125,000	$10	$10	e $30,000	.........$23,264	31-7-05	$1 for year ended 31-7-1905...........	4-9-05	6	$16 buyers
International Cotton Manufacturing Co., Ld.	1895	T750,000	(6) 10,000	T75	T75	T100,000	.........T18,718	30-9-05	Interim of 3 % a/c 1898.................	30-4-98	—	T61 buyers
Laou-kung-mow Cotton Spinning & Weaving Co., Ld.	1895	T800,000	(7) 8,000	T100	T100	none	.........T30,760	31-12-05	Tls. 8 for 1905	21-2-06	12	T67½ sellers
Soey Chee Cotton Spinning Co., Ld.....	1895	T1,000,000	2,000	$500	$500	I T18,456	.........T35,986	31-12-05	Tls. 25 for 1905...........................	7-3-06	8¼	T300 sales
Miscellaneous.												
Anglo German Brewing Co., Ltd.	1904	$100,000	4,000	$100	100	none	.... $1,066	31-12-05	$7 for 1905	1-3 06	7	$100 sales
Bell's Asbestos Eastern Agency, Ld......	1895	£5,377.10s	8,604	12/6	12/6	£314	............£770	31-12-04	1s. 3d for 1904............................	21-7-05	9	$7¼
Campbell, Moore & Co., Ld...............	1886	$12,000	1,200	$10	$10	$8,000	...........$1,182	31-12-04	$3 for 1904	1-4-05	8¼	$36
China-Borneo Co., Ld........................	1903	$720,000	(8) 60,000	$12	T12	none	Nil	31-12-05	$1 for 1904	17-3-05	—	$7 buyers
China Flour Mill Co., Ld.	—	T200,000	4,000	T50	T50	T50,000	.............T889	31-12-05	Final of T 5 making T 10 for 1905.	17-3-06	12½	T80 buyers
China Light and Power Co., Ld.	1901	$500,000	50,000	$10	$10	none	..........$3,739	29-2 05	None	—	—	$10
China Provident Loan and Mortgage Co., Ld.	1898	a $1,000,000	100,000	$10	$10	$100,000	..........$4,791	31-12-05	80 cents for 1905	22-1-06	9	$9
Dairy Farm Company, Ld...................	1896	$187,500	25,000	$7½	$6	$25,000	.... $2,864	31-7-05	1.20 for year ending 31-7-1905	24-11-05	7½	$16

STOCK	WHEN ESTAB-LISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	AT WORKING ACCOUNT	DATE	LAST DIVIDEND	WHEN PAID	Approximate Return at Present Quotation* PER CENT	CLOSING QUOTATIONS
Miscellaneous.—Continued												
Green Island Cement Co., Ld	1889	$1,500,000	150,000	$10	$10	$410,000 *p* $500,000	$52,291	31-12-05	$2 div. & 50 cents bonus for '05	26-2-06	8¼	$30 sales
Hall & Holtz, Ld.	—	$420,000	21,000	$20	$20	$186,000	$7,551	29-2-05	Final of $1½ making $2½ for the year	15-4-05	11¼	$22 buyers
Hongkong Electric Co., Ld.	1889 1899	$600,000	30,000 30,000	$10 $10	$10 $10	none	$2,151	30-4-05	$1.00 50 cents for year ending 30-4-05	17-7-05	6 —	$16¾ $16
Hongkong High-Level Tramways Co., Ld.	1887	$125,000	1,250	$100	$100	$50,000	$2,796	30-11-04	$15 for year ending 30-11-04	24-12-04	7	$215 buyers
Hongkong Ice Company, Ld.	1881	$125,000	5,000	$25	$25	*k* $80,000	$3,776	31-12-05	Final of $15 making $19 for 1905	16-2-06	8	$235 buyers
H'kong Rope Manufacturing Co., Ld.	1883	$500,000	10,000	$50	$50	$61,000	$5,813	31-12-05	$9 for 1905	15-3-06	6¼	$143
Hongkong Steam Waterboat Co., Ld.	1900	$150,000	15,000	$10	$10	$2,500	$88	30-9-05	Final of 50 cents making $1 for year ended 30-9-1905	24-11-05	10	$10 sellers
Maatschappij tot Mijn-, Bosch-en Landbouwexploitatie in Langkat	1902	Gs.2,500,000	25,000	G.100	G.100	T528,210 *i* T19,465	T35,849	31-10-04	First quarterly dividend of T7½ account 1906	15-3-06	11	T222½ buyers
Mondon, (E. L.) Ld	1902	T350,000	7,000	T50	T50	none	*Dr.* T117,638	31-12-04	T5 for 1902	2-5-03	—	T25
Philippine Company, Ld	1904	$675,000	67,500	$10	$10	none	*Dr.* P34,324	31-12-05	None	—	—	$5 buyers
Shanghai Gas Co., Ld.	1903	T800,000	16,000	T50	T50	*d* T165,000	T11,017	31-12-05	T3 final & T1½ bonus making in all T8½ for 1905	7-3-06	6½	T132½ sales
Shanghai Horse Bazaar Co., Ld.	1904	T270,000	5,400	T50	T50	T45,000	T9,751	31-12-04	T6 for 1904	17-3-05	9	T67½
Shanghai Pulp and Paper Co., Ld.	—	T450,000	4,500	T100	T100	T37,000 *e* T8,000	T2,753	31-12-05	Final of T8 making T14 for 1905	27-2-06	9	T150 sellers
Shanghai Sumatra Tobacco Co., Ld	1902	T600,000	(9) 30,000	T20	T20	T24,820 *w* T25,000	T1,452	31-10-05	Final of T3 making T5 for the year.	15-3-06	9	T56½ buyers
Shanghai Waterworks Co., Ld.	1881	£288,000	7,200 7,200	£20 £20	£20 £5	T170,000	T17,220	31-12-04	Interim of 15/- for 1905 First year	27-7-05 —	— —	T450 ex new T200 buyers
South China Morning Post, Ld.	1903	$150,000	6,000	$25	$25	none	*Dr.* $5,068	29-2-05	None	—	—	$20 sellers
Steam Laundry Co., Ld	1902	$100,000	20,000	$5	$5	none	$1,134	31-5-05	50 cents for year ended 31-5-05	20-11-05	8¼	$6
Tientsin Waterworks Co., Ld.	1901	T. T200,000	2,000	T. T100	T. T100	T15,259 *e* T4,000	T1,012	30-4-05	Interim of T4 for year 1905/6	12-2-06	7¾	T. 110
United Asbestos Oriental Agency, Ld. Do. do (Founders')	1896	$100,000	9,900 100	$10 $10	$4 $10	$22,000	$551	31-5-05	80 cents $19.80 for year ended 31-5-05	29-7-05	9 11	$9 $180
Watson (A. S.) & Co, Ld.	1886	$900,000	90,000	$10	$10	$300,000 $25,000	$6,096	31-12-04	Interim of 50 cents for 1905	23-11-05	7¾	$13
William Powell, Ld	1901	$150,000	15,000	$10	$10	*e* $4,500	$676	30-6-05	Final of 70 cents making $1.20 for year ended 30-6-05	2-10-05	11	$11

LOANS AND DEBENTURES	AGENTS FOR THE LOAN	AMOUNT OF LOAN	PAR VALUE	OUT-STAND'G BONDS	WHEN PAYABLE	CLOSING QUOTATIONS
China Government, 7 per cent. Silver Loan 1886 E.	Hongkong & Shanghai Bkg. Cor.	T767,200	T250	1914	Mar. 31st & Sept. 30th each year until Mar. 31st, 1917.	par. Plus accrued interest
Hongkong Hotel Co., Ltd., 6% Mortgage Debentures of 1899‡		$500,000	$500	§ all	Half yearly, June 30th and December 31st	par.
Shanghai & Hongkew Wharf Company, Ltd. 6% Debentures of 1902		T543,900	T100	....	Half yearly, June 30th and December 31st	T96
Astor House Hotel Co., Ltd. 8% Debentures of 1903		T500,000	T100	....	Half yearly, January 1st and July 1st	T105
Chinese Engineering & Mining Co., Ltd., 6% Debentures of 1903†	....	£500,000	¶	£431,960	Half yearly, June 30th and December 31st	par.
International Cotton Manufacturing Co., Ltd. 6% Debentures of 1901	Russo Chin. Bk.	T500,000	T100	‖	Half yearly, March 31st and September 30th	par.

a Auhorized capital $2,000,000.
b Building Reserve Account.
c Capital Reserve Fund.
d Depreciation Fund.
e Equalization of Dividend Fund.
f Exchange and Investment Fluctuation Account.
g Gold Reserve Fund.
h Exchange Reserve Account.
i Insurance Fund.
j Reinsurance Fund.
k Contingencies Account.
l Legal Reserve Fund.
m
n Sinking Fund.
o
p Premium on New Issue.
q
r Repairs and Renewals Account.
s Silver Reserve Fund.
t
u Underwriting Suspense Account.
v
w Special Works Fund.
x Extra Reserve Fund.
y 72,560 owned by the Company.
z 6,000 shares unissued.
1 5,725 shares unissued.
2 First issue of 60,000 of which 10,411 unalloted.
3 5,000 shares unissued.
4 7,600 shares unissued.
5 5.000 shares unalloted.
6 1,616 shares unalloted.
7 842 shares unissued.
8 14,000 shares unissued.
9 17,000 shares unissued.
* Based on last year's dividend.
‖ Only Tls. 134,000 taken up.
§ 216 held by the Company.
¶ In certificates of £20 and £100.
‡ Redeemable in 10 years, or at option of Company the Company giving 6 months' notice.
† Redeemable at par at rate of £10,000 per annum from 31st December, 1903 to 31st December 1952.
Dr. Deficit.

NAME	DATE OF FORMATION	CAPITAL	CAPITAL PAID UP	NO. OF SHARES	ISSUE VALUE	PAID UP	RESERVE	LAST DIVIDEND	SINCE LAST MAIL		CLOSING QUOTATIONS
									HIGHEST	LOWEST	
Mining.									$	$	$
Bersawah Gold Mining Co., Ltd	1900	$175,000	140,000	10,000 [1]	10	10	......	......	......	......	14.00 sellers
" " " " " *Deferred.*				4,000	10	10	......	......	......	......	8.00 sellers
Bruseh Hydraulic Tin Mining Co., Ltd	1901	$600,000	600,000	60,000	10	10	......	......	......	......	10.10 sellers
Kadana Gold Mining Co., Ltd	1901	$300,000	300,000	20,000	10	10	......	......	......	......	2.00 sellers
" " " " " *Pref.*				10,000	10	10	......	......	......	......	10.00 nominal
Kechau Goldfields, Ltd. *Fully paid*	1902	£30,000	16,175.7/-	6,207	1	1	......	......	......	......	in liquidation
" " " *Contrib.*				10,493 [2]	1	19/-	......	......	......	......	in liquidation
Kuantan Tin Mining Co., Ltd	1905	$150,000	99,000	9,900 [3]	10	10	......	......	15.50	15.00	15.25 sales
Pahang Corporation, Ltd	1889	£250,000	244,306	244,306 [4]	1	1	20,000	3% for year ending 30 6-02	1.75	1.50	1.75 sales & buyers
Pahang Kabang, Ltd	1890	£375,000	375,000	360,000	1	1	......	......	0.25	0.20	0.25 buyers
" " " *Pref.*				15,000	1	1	......	......	......	......	nom.
Queensland Raub G. M. Co., Ltd. *Fully paid*	1901	£146,700	100,866	36,700	1	1	......	......	......	......	nom.
" " " " *Contrib.*				110,000	1	11/8	......	......	......	......	nom.
Raub Aust. Gold Ming. Co., Ltd. *Fully paid*	1892	£200,000	191,250	50,000	1	1	4,873	1s. paid January, '01	......	......	2.50 sellers
" " " " *Contrib.*				150,000	1	18/10	......	1s. " " "	......	......	2.50 sellers
Redjang Lebong Mining Co.	1898	f.2,000,000	1,800,000	18,000 [5]	100	100	......	32% for year ending 31-12-05.	......	......	385.00 buyers
Royal Johore Tin Mining Co., Ltd	1900	$220,000	220,000	22,000	10	10	......	5% for year ending 15-2-04	......	......	3.25 sellers
Sipiau Tin Co., Ltd	1899	$230,000	230,000	23,000	10	10	......	5% for ½ year ending 30-6-05	......	......	7.00 sellers
The Belat Tin Mining Co., Ltd	1903	$300,000	300,000	30,000	10	10	......	......	3.00	2.50	2.50 sellers
The Pusing Lama Tin Mines, Ltd	1904	£120,000	98,000	98,000 [6]	1	1	......	6d. paid February, 1906	......	......	10.50 sellers
Tronoh Mines, Ltd	1902	£160,000	149,185	149,185 [7]	1	1	......	7s. paid during 1905	18.00	17.50	18.00 buyers
Duff Development Co., Ltd	1903	£400,000	350,000	350,000 [8]	1	1	......	......	......	......	6.00 sellers
Rubber.											
Anglo-Malay Rubber Co., Ltd	1905	£150,000	140,000	140,000 [9]	1	1	......	......	......	......	£1 12*s* 6*d*
Balgownie Rubber Estate Ltd	1905	$200,000	100,000	20,000	10	5	......	......	11.75	11.50	$11.75 sales
Batu Caves Rubber Co Ltd. *Fully paid*	1904	£30,000	11,125	7,000 [10]	1	1	......	......	......	......	......
" " " " *Contrib.*				11,000	1	7/6	......	......	......	......	£1 0s 0d.
Bukit Rajah Rubber Co. Ltd *Fully paid*	1903	£70,000	59,250	54,000 [11]	1	1	......	......	......	......	£3 15s. 0d. ......
" " " " " *Contrib.*				7,000	1	15/-	......	......	......	......	£3 10s. 0d.
Cicely Rubber Estates Co., Ltd	1904	£12,000	10,500	6,000	1	1	......	......	......	......	£2 5s. 0d.
" " " 5% Pref.				6,000	1	15/-	......	......	......	......	£2 5s. 0d. ......
Consolidated Malay Rubber Estates, Ltd	1905	£75,000	55,000	55,000 [12]	1	1	......	......	......	......	£1 17s. 6d. ......
Sione Rubber Company. Ltd	1905	$100,000	88,000	8,800 [13]	10	10	......	......	17.00	16.50	$16.50 sellers
Sungei Way (Selangor) Rubber Co., Ltd	1904	£50,000	15,670	6,920 [14]	1	1	......	......	......	......	£2 0s. 0d. buyers
" " " " *Contrib.*				35,000	1	5/-	......	......	......	......	£1 4s. 0d. buyers
The Batu Unjor Rubber Co., Ltd	1905	$700,000	610,000	61,000 [15]	10	10	......	......	24.50	24.25	$24.50 sellers
The Pataling Rubber Estates Syndicate Ltd.	1903	£30,000	20,000	20,000 [16]	1	1	......	......	......	......	£5 0s. 0d. buyers
The Ribu Planting Co., Ltd	1904	$200,000	135,000	1,350 [17]	100	100	......	......	......	......	$270.00 ......
The Sandycroft Rubber Co. Ltd	1904	$100,000	85,000	850 [18]	100	100	......	......	......	......	$260.00 ......
The Selangor Rubber Co., Ltd	1898	£30,000	26,300	26,300 [19]	1	1	......	......	......	......	£8 0s. 0d. sales
The Singapore & Johore Rubber Co., Ltd	1903	$100,000	91,500	150	100	100	......	......	......	......	$185.00 buyers
" " " " " " *Contrib*				850	100	90	......	......	......	......	$175.00 buyers
Vallambrosa Rubber Co., Ltd	1904	£60,000	50,000	50,000 [20]	1	1	......	......	......	......	£5 0s. 0d. ......
General.											
Fraser & Neave, Ltd	1898	$225,000	225,000	4,500	50	50	112,500	15% dividend for 1905	100.00	99.00	100.00 sales & sellers
Hogan & Co., Ltd	1904	$480,200	334,800	3,348 [21]	100	100	5,000	7% for 1904	......	......	10.00 buyers
H'kong and Shanghai Banking Corporation	1865	$10,000,000	10,000,000	80,000	125	125	10,000,000 [25] 9,500,000 [26] 250,000 [27]	35s. and 20/- bonus for ½ year ending 31-12-05	......	......	800.00 buyers
Howarth Erskine, Ltd	1901	$2,400,000	18,000	100	100	......	......	......	150.00	145.00	150.00 sellers
" " " 7% Pref.			6,000	100	100	......	......	......	115.00	110.00	110.00 buyers
Maynard & Co., Ltd	1901	$34,000	34,000	3,400	10	10	......	15% for year ending 31-10-05	......	......	23.00 sellers
Riley, Hargreaves & Co., Ltd	1899	$875,000	875,000	6,000	100	100	150,000	10% and 2½% bonus for year '04	150.00	115.00	130.00 sellers
" " " " 7% Pref.				2,750	100	100	......	7% for year 1904	115.00	110.00	110.00 ......
Singapore Cold Storage Co., Ltd	1903	$600,000	240,000	24,000 [22]	10	10	......	......	......	......	9.00 sales
Singapore Dispensary Ltd	1891	$30,000	30,000	600	50	50	19,000	12½% for year ending 31-7-04	......	......	70.00 sellers
Straits Ice Co., Ltd	1884	$200,000	200,000	2,000	100	100	22,000	5% interim for 1905	......	......	160.00 buyers
Straits Steam Ship Co., Ltd	1890	$500,000	421,500	5,000 [23]	100	100	400,000 169,228 [28]	10% for 1905	......	......	147.50 buyers
Straits Trading Co., Ltd	1887	$3,000,000	2,500,000	250,000 [24]	10	10	700,000 1,021,395 [29]	10% & 5% bon. ½ yr. end. 30-9-05.	44.75	44.50	44.50 sales & sellers
Tanjong Pagar Dock Co., Ltd	1864	$3,700,000	3,700,000	37,000	100	100	1,950,000	$6 for half year ending 31-12-05	......	......	480.00 ......
Debentures. $											
Howarth Erskine Ltd. 6 per cent ... 600,000	......	......	......	......	......	......	......	......	......	......	2% prem. buyers
Singapore Municipal 6 " ... 400,000	......	......	......	......	......	......	......	......	......	......	3% prem. buyers
" " 5 " ...1,878,000	......	......	......	......	......	......	......	......	......	......	par buyers
" " 4 " ... 602,300	......	......	......	......	......	......	......	......	......	......	2% dis. nominal
Riley, Hargreaves & Co., Ld. 6 p. cent 225,000	......	......	......	......	......	......	......	......	......	......	2% prem. buyers
Tanjong Pagar Dock Co., Ld. 6 " 250,000	......	......	......	......	......	......	......	......	......	......	2% prem. buyers
" " " " 5 " 1,365,500	......	......	......	......	......	......	......	......	......	......	par buyers

---

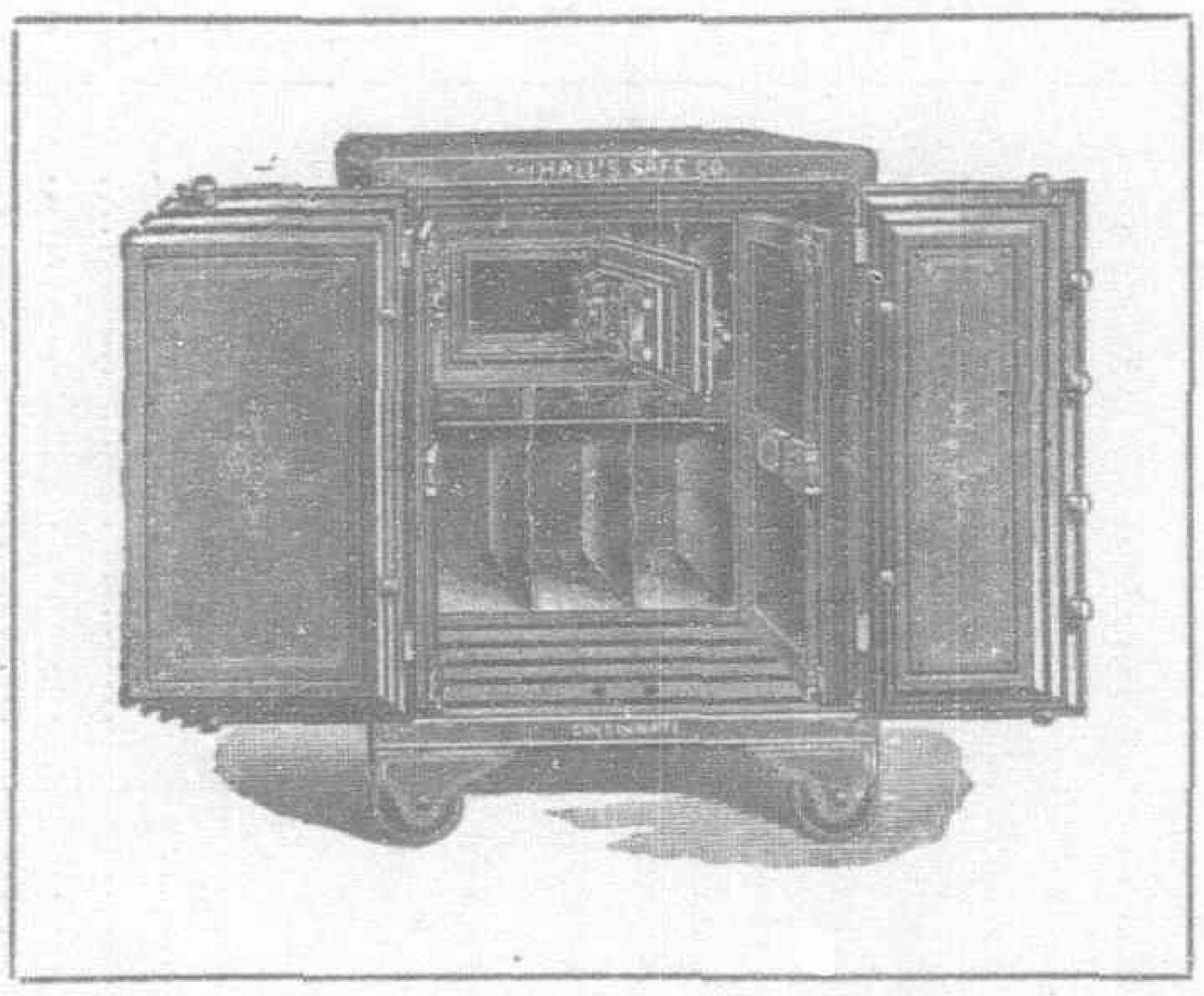
[1] 3 500 unissued.
[2] 13,300 "
[3] 5,100 "
[4] 5,694 "
[5] 2,000 "
[6] 22,000 unissued
[7] 10,815 "
[8] 50,000 "
[9] 10,000 "
[10] 12,000 "
[11] 9,000 unissued
[12] 20,000 "
[13] 1,200 "
[14] 8,080 "
[15] 9,000 "
[16] 10,000 unissued Mort. £5,000
[17] 650 "
[18] 150 "
[19] 3,700 "
[20] 10,000 "
[21] 1,454 unissued.
[22] 36,000 "
[23] 785 "
[24] 50,000 "
[25] Special Gold Reserve Fund.
[26] Silver Reserve Fund.
[27] Insurance Fund.
[28] Sundry Reserves.
[29] Sundry Reserves.

YOKOHAMA SHARE QUOTATIONS

Courtesy A. C. Hutton Potts, Share and General Broker, Yokohama, March, 1906.

STOCKS.	CAPITAL.	NO. OF SHARES.	ISSUE VALUE.	AMOUNT PAID UP.	RESERVE FUND.	AT WORKING ACCOUNT OR CARRIED FORWARD.	DATE.	LAST DIVIDEND.	FOR TERM.	CLOSING QUOTATION.
	Y.		Y.	Y.						
Brett & Co., Limited	28,000	2800	10	10			30/6/03	6%	for 1 year	6.50 Sales.
Club Hotel, Limited	185,000	1850	100	100			31/3/04	7%	,, 1 year	60 Nominal.
Grand Hotel, Limited	250,000	2500	100	100		Y.6,179.25	31/12/05	10%	,, ½ year	225 Sales.
Helm Bros., Limited	186,000	3720	50	50		Y.6,235.70	31/12/05	17½%	,, 1 year	87½ Sellers.
Langfeldt & Co., Limited	150,000	1500	100	100		Dr.28,875.52	31/12/05		,, ½ year	45 Sellers.
C. Nickel & Co., Limited	500,000	20000	25	25		5,106.41	31/10/05	12%	,, 1 year	34 Sellers.
Japan Brewery Company, Limited	450,000	9000	50	50	200,000	8,702.28	31/12/05	20%	,, 1 year	130 Sellers.
Yokohama Engine and Iron Works	130,000	2600	50	50	20,000	Y.20,149.17	30/11/05	10%	,, ½ year	120 Sales.
Hirano Mineral Water Co., Ltd.	125,000	5000	25	25				1st year		25 Sellers.
Oriental Hotel, Ltd., Old Ordinary	251,000	1490	50	50	60,542.50		31/8/05	12%	,, 1 year	75 Nominal.
,, ,, New ,,		1510	50	25						
,, ,, Old Preference		750	50	50				8%	,, 1 year	63 Sales.
,, ,, New ,,		1250	50	25						
,, ,, Founders	G	80	12½	12½				Y.37	,, 1 year	500 Sales.
Oriental Consolidated Mining Co., Ltd.	$5,000,000	500,000	G.$10	G. $10	none	G. $672,093	31/1[illegible]	G. $1.	,, 1905	G. $18 Sellers.
Raub Australian Gold Mining Co., Ltd.	£200,000	150,000 50,000	£1 £1	18/10 £1	£4,873	*Dr.* £8,745	31/3/05	48 cts.	,, 1901	$3 Buyers.

DEBENTURE LOANS.	AMOUNT OF LOAN.	FACE VALUE OF DEBENTURES.	RATE OF INTEREST.	INTEREST PAYABLE.	CLOSING QUOTATION.
Japan Brewery Company, Limited	200,000.00	100.00	7%	1 April and 1 October.	108 Sales.
Brett and Company, Limited	11,500.00	100.00	7%	1 June and 1 Dec.	85 Sales.
Yokohama United Club	250,000.00	100.00	7%	30 June and 31 Dec.	108 Sales.
C. Nickel and Company, Limited	50,000.00	100.00	8%	1 May and 1 Nov.	110 Sellers.



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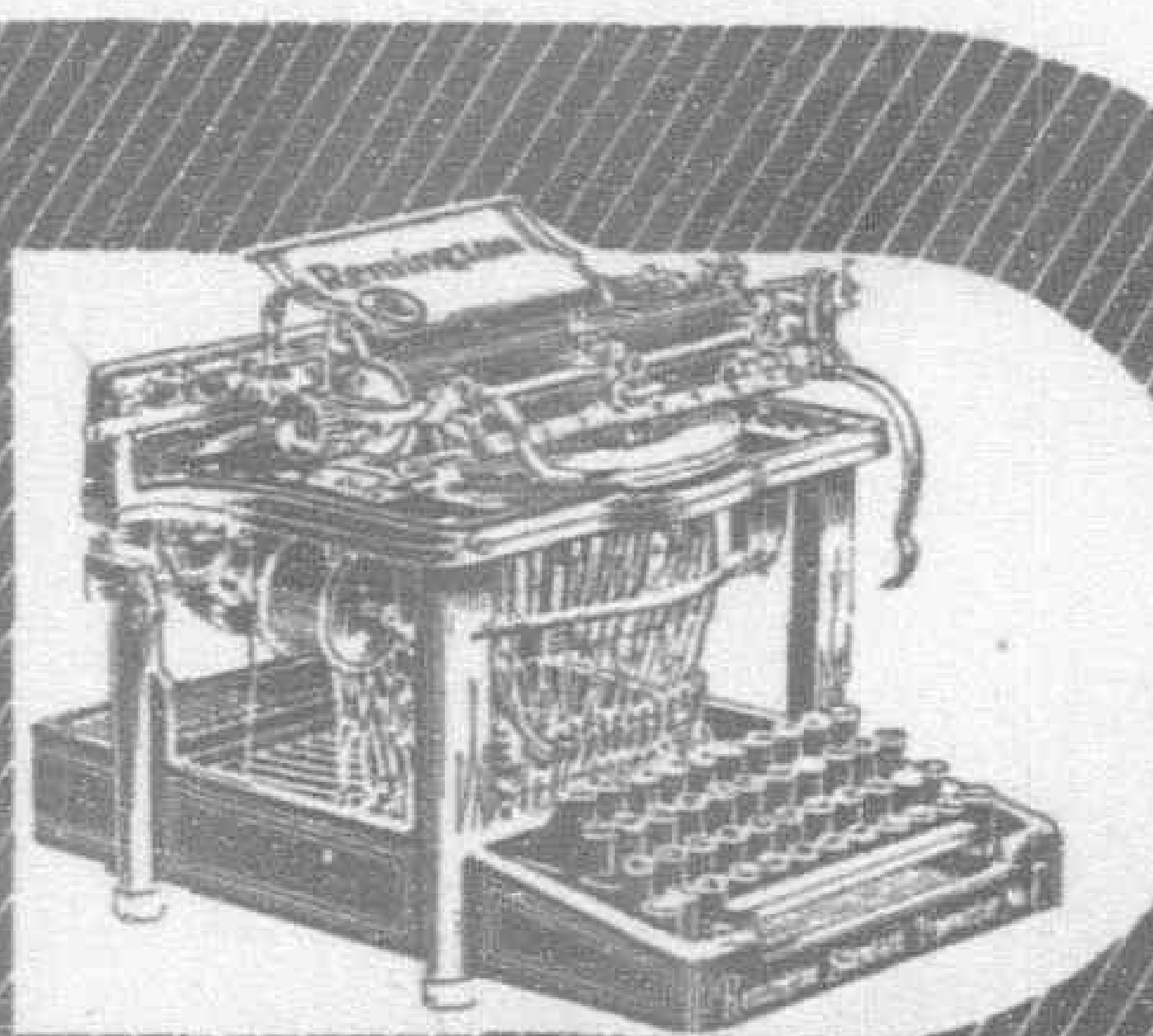

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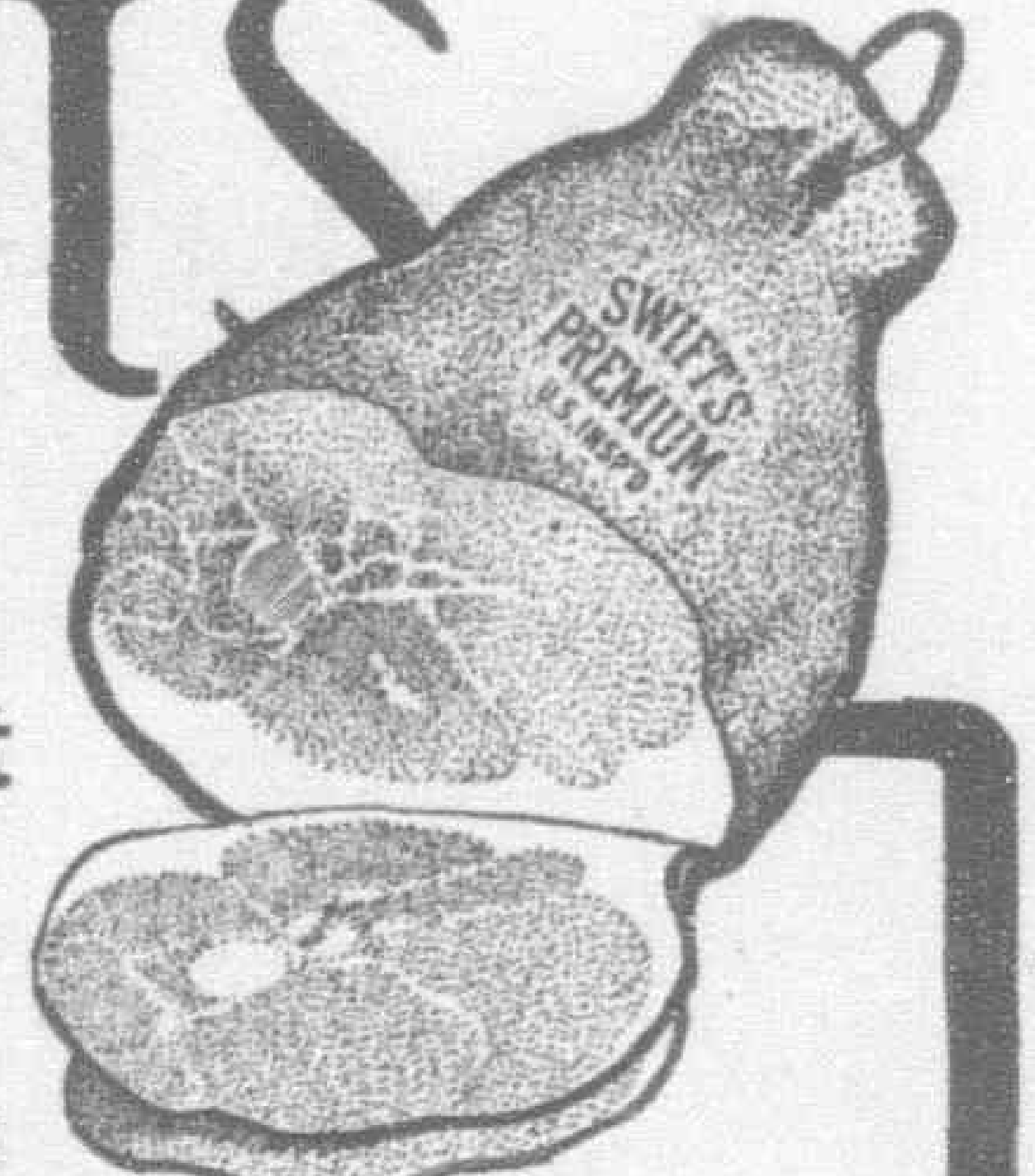

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- WATER POWER DEVELOPMENT
- STEAM RAILROADS
- RIVER AND HARBOUR IMPROVEMENT

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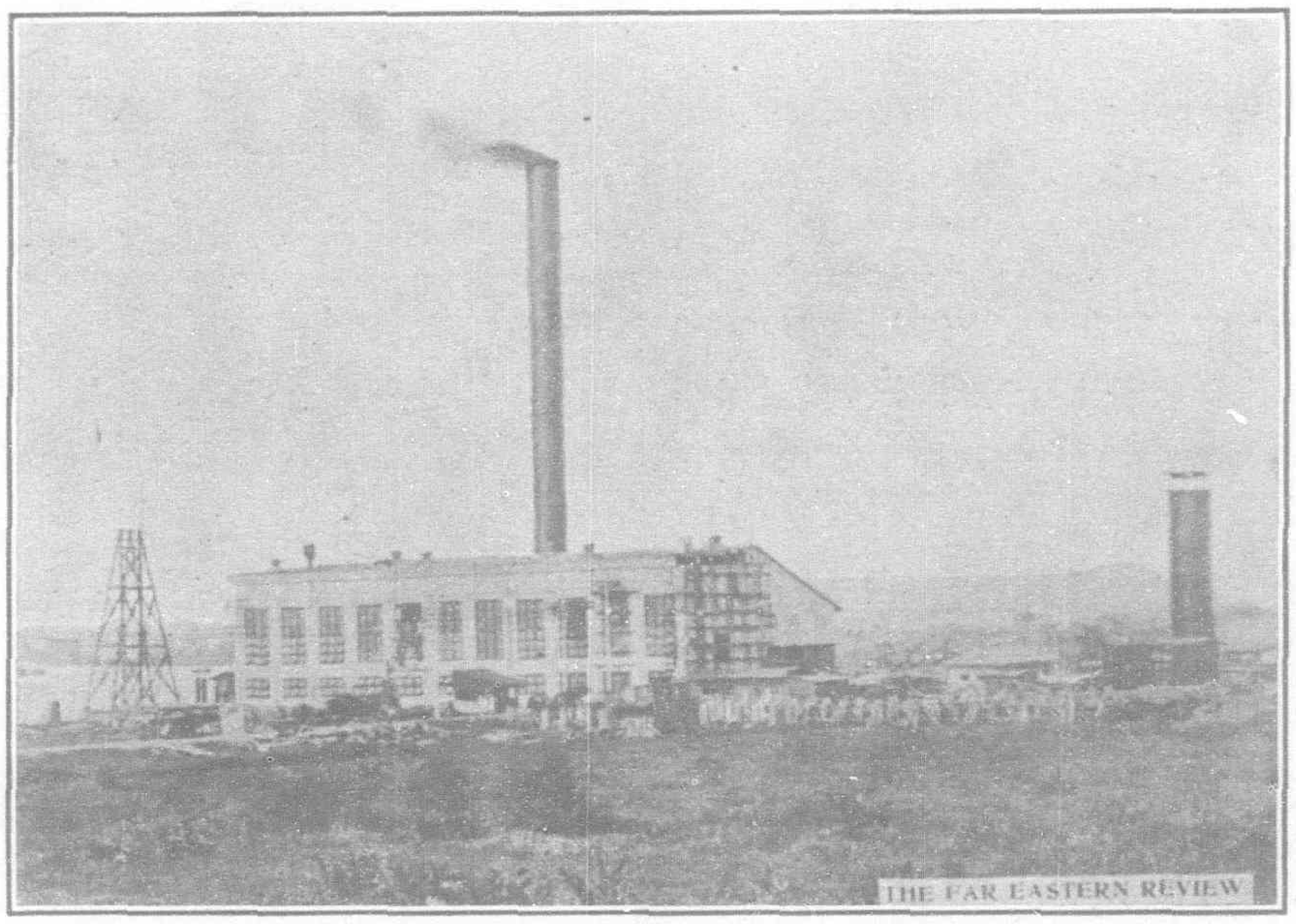
- DOCKS
- WHARVES
- PAVING
- WATER SUPPLY
- SEWERS
- COAL HANDLING PLANTS



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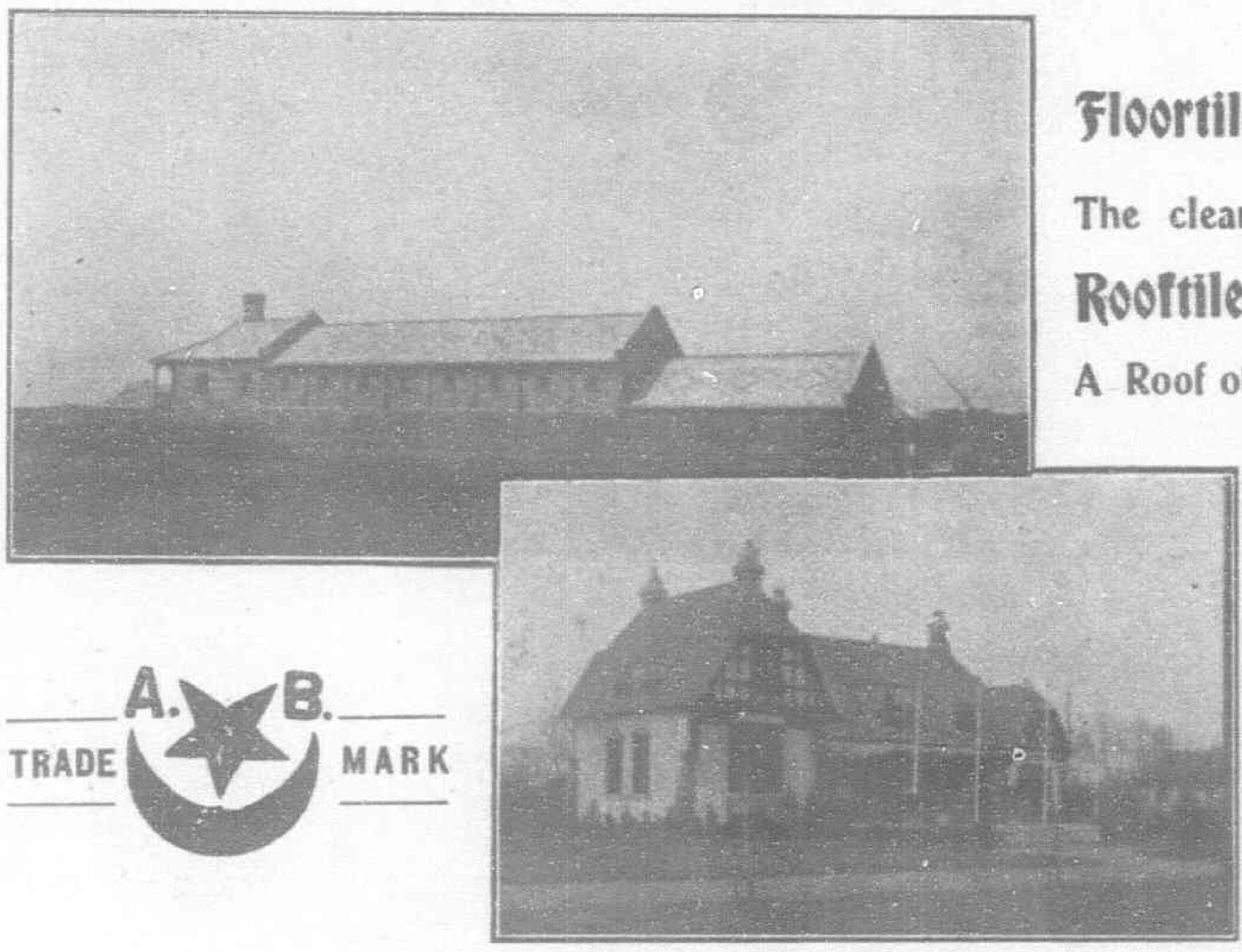
CONCRETE STEEL BRIDGE, MANILA—UNDER CONSTRUCTION
ILOILO HARBOUR IMPROVEMENT—UNDER CONSTRUCTION
CEBU HARBOUR IMPROVEMENT—UNDER CONSTRUCTION
TIMBER PIER AND WHARF, QUARTERMASTER'S DEPARTMENT, MANILA

The A. Butler Cement Tile Works, Ltd., Shanghai



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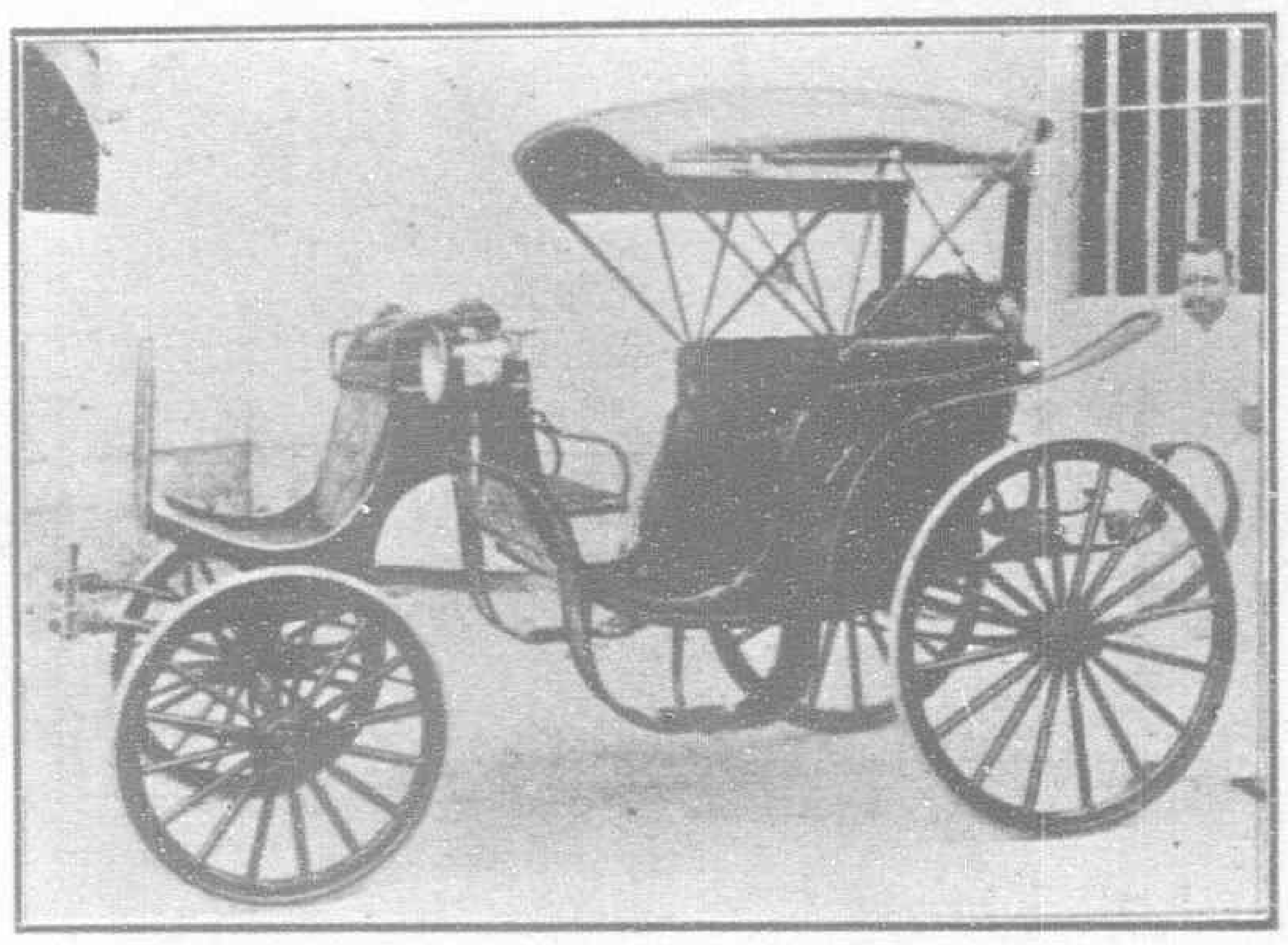

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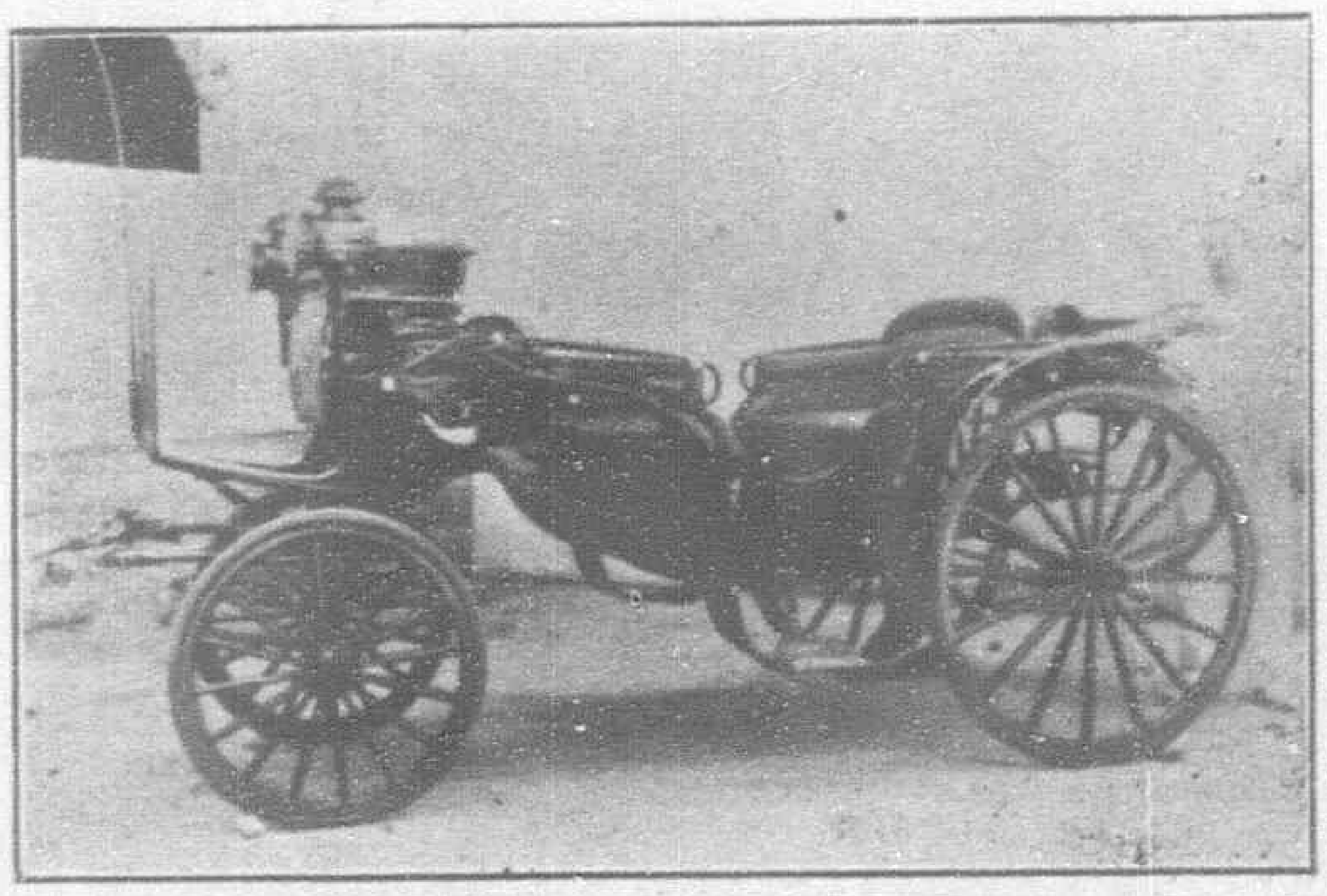

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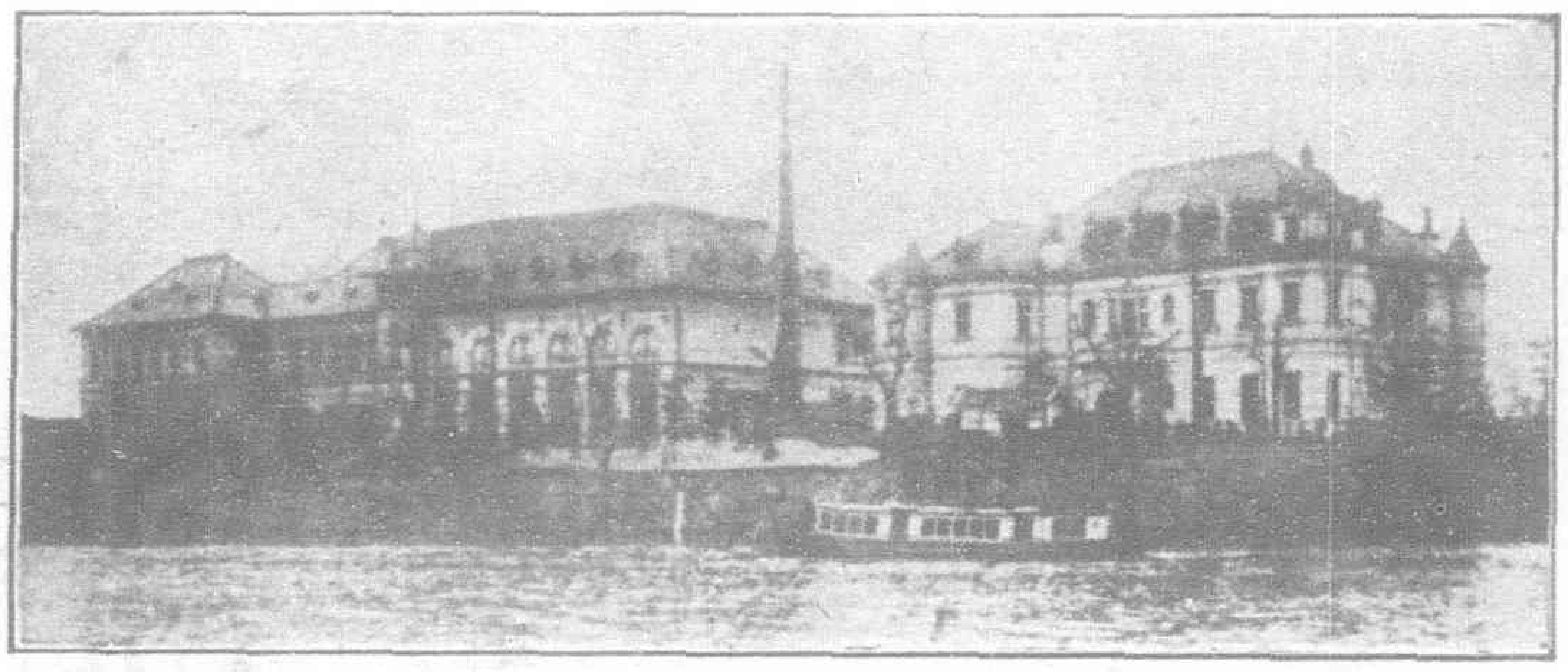

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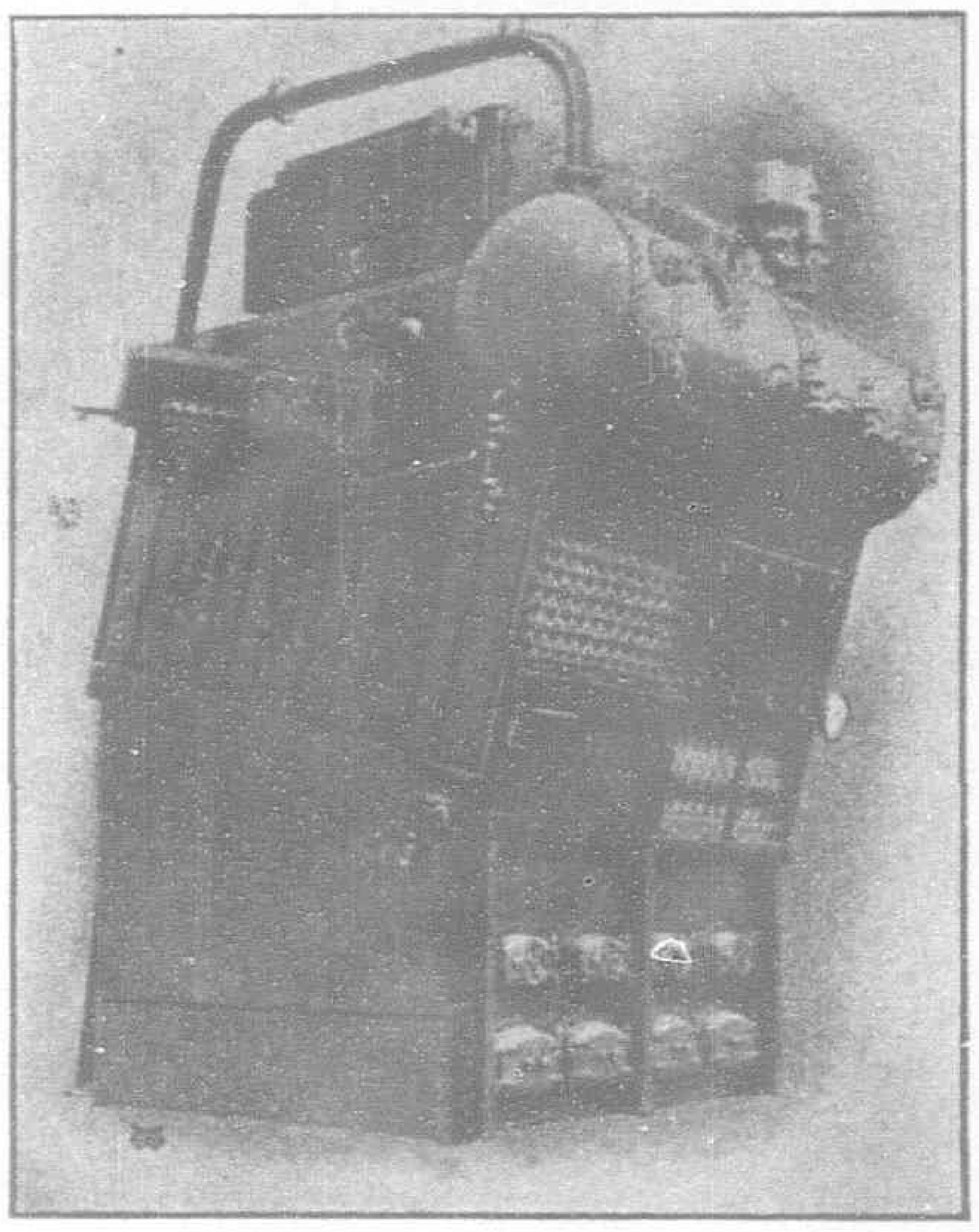
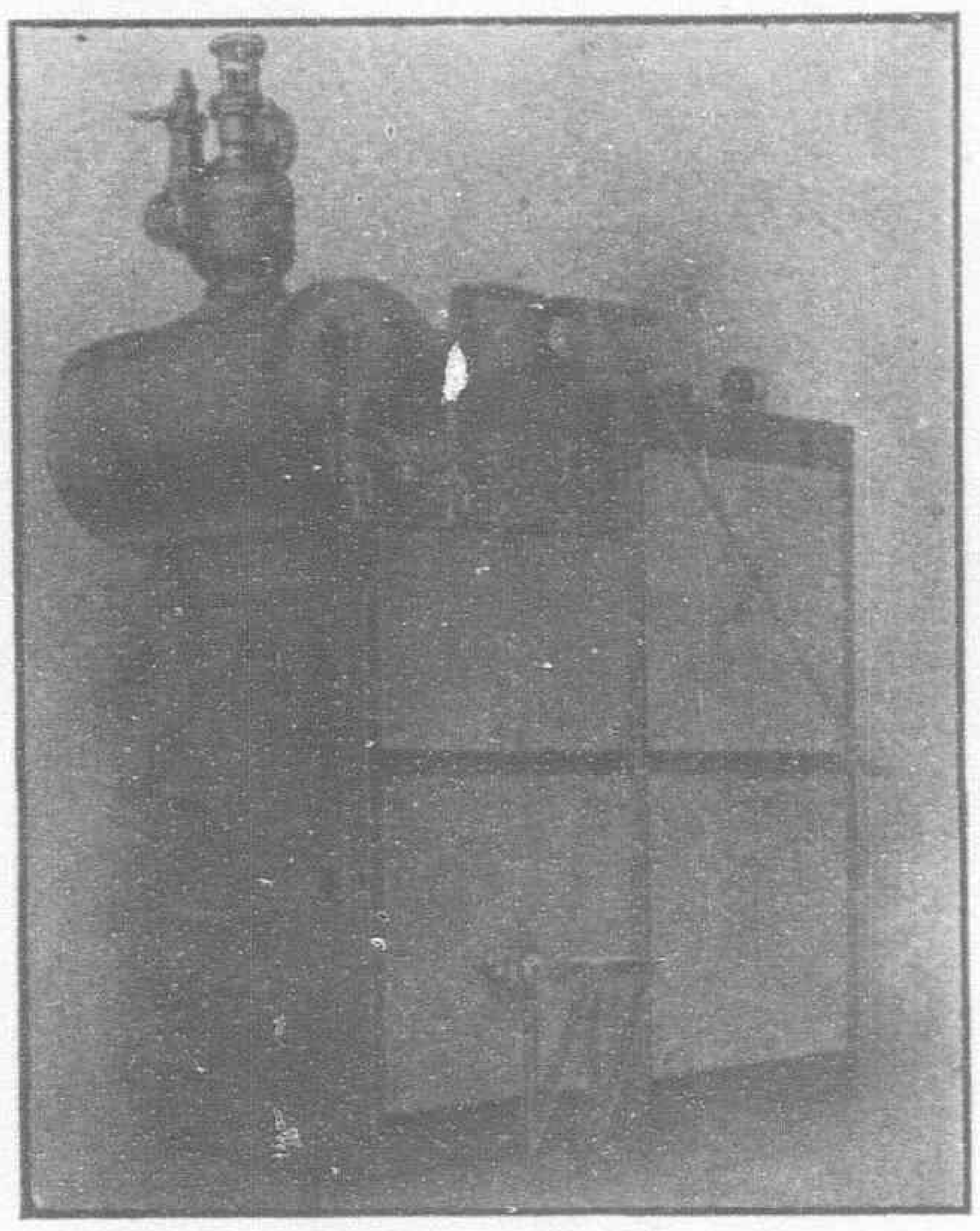


MARINE TYPE FOR LAND PLANTS



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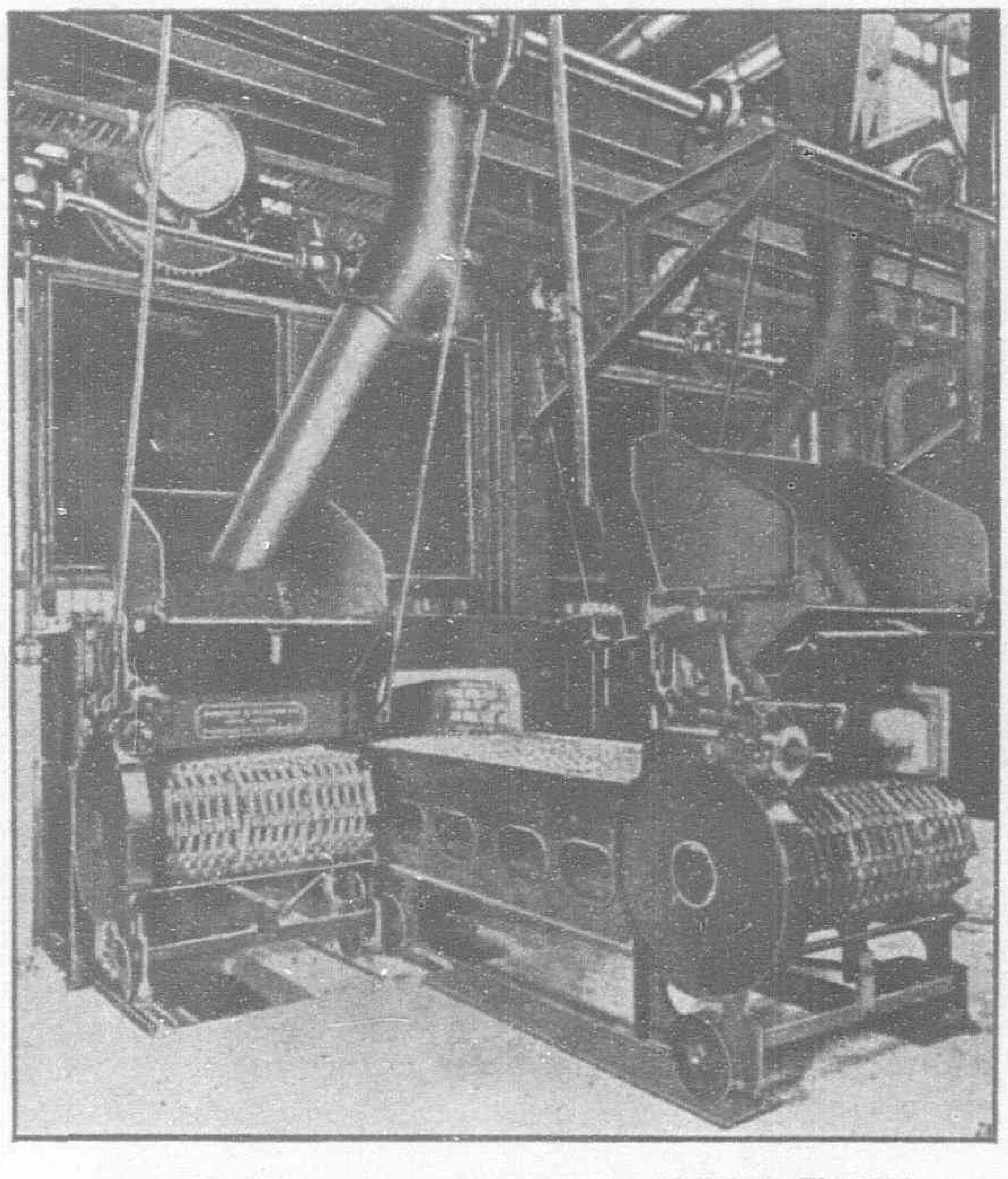

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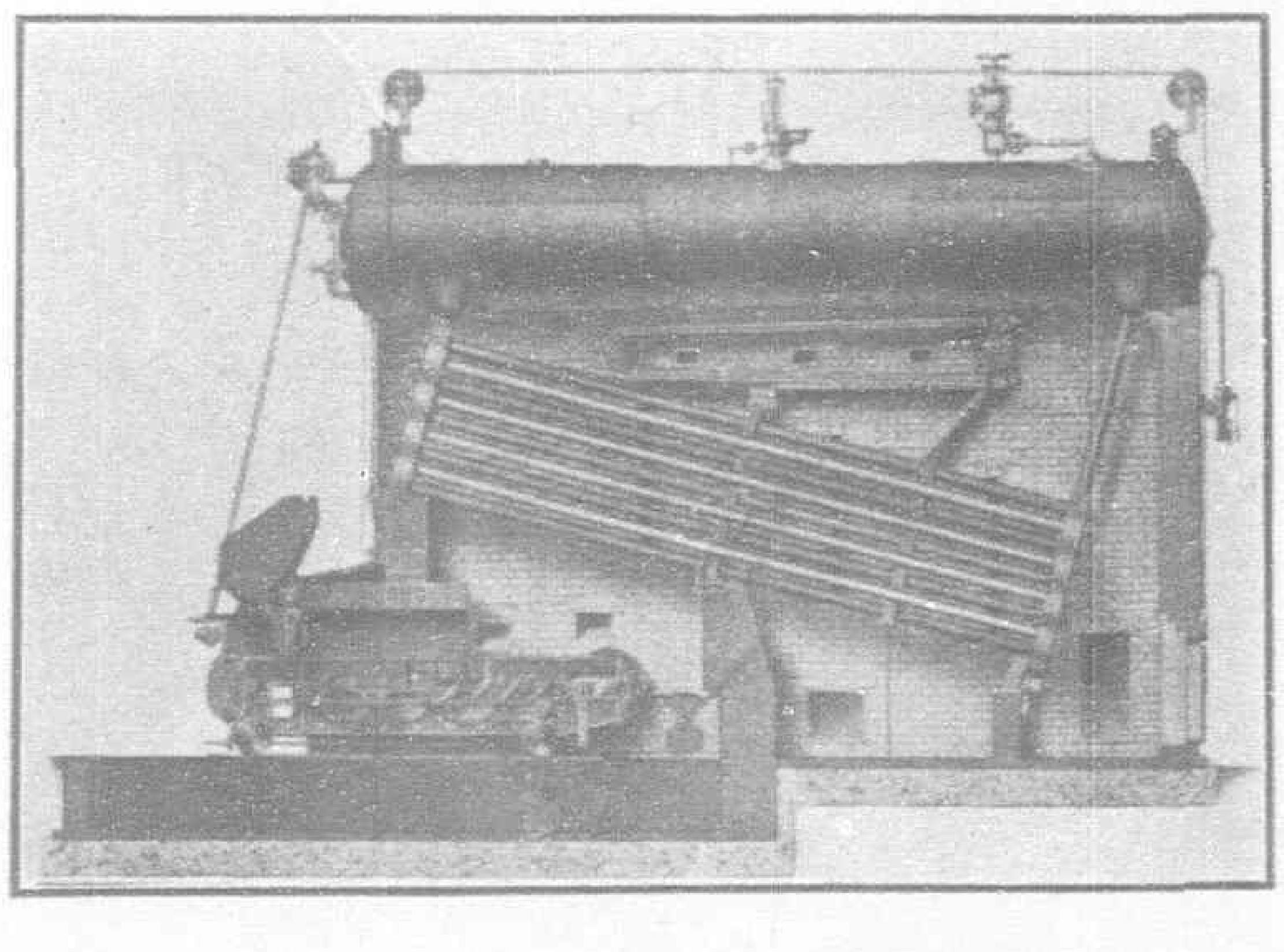

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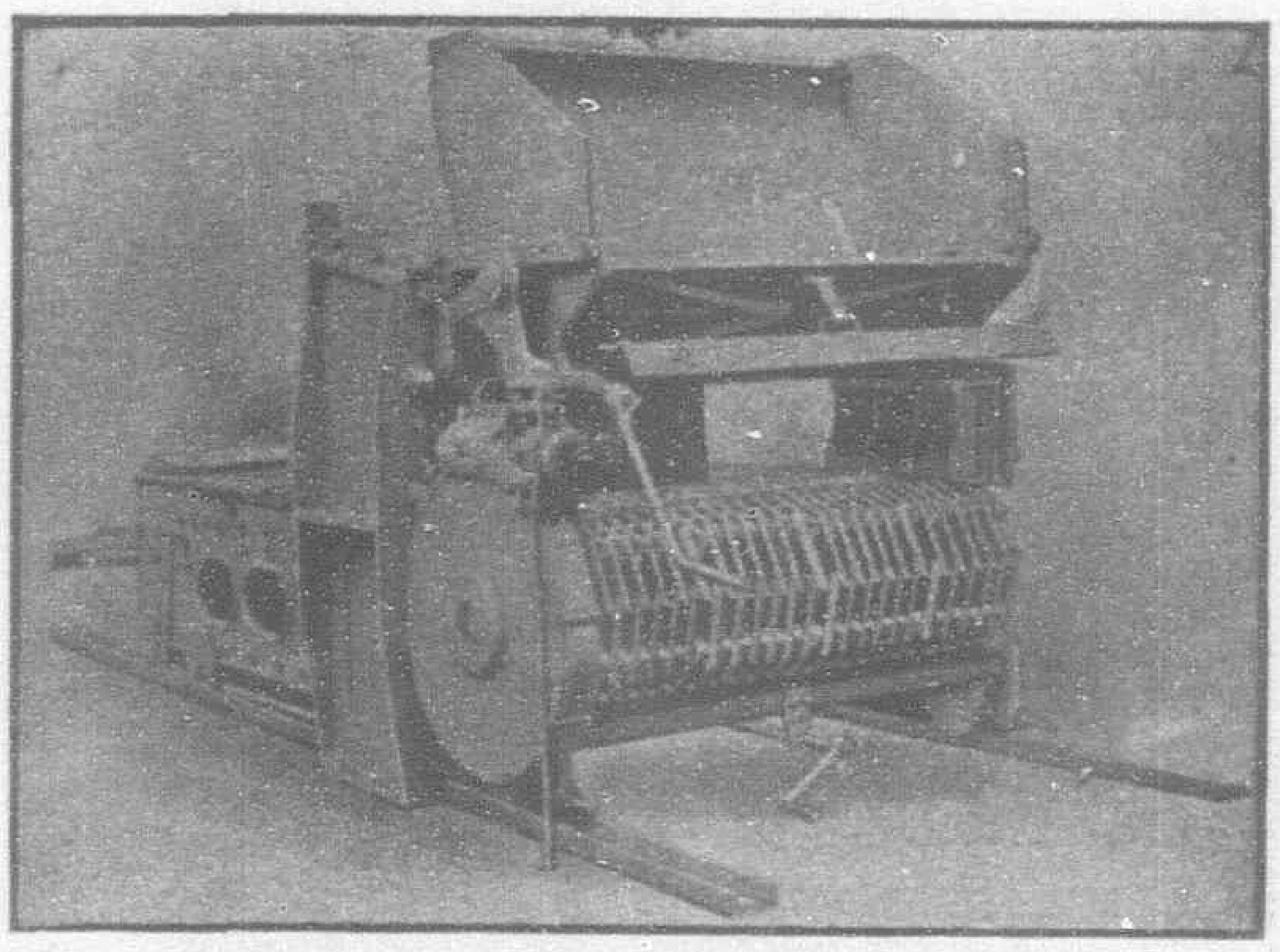

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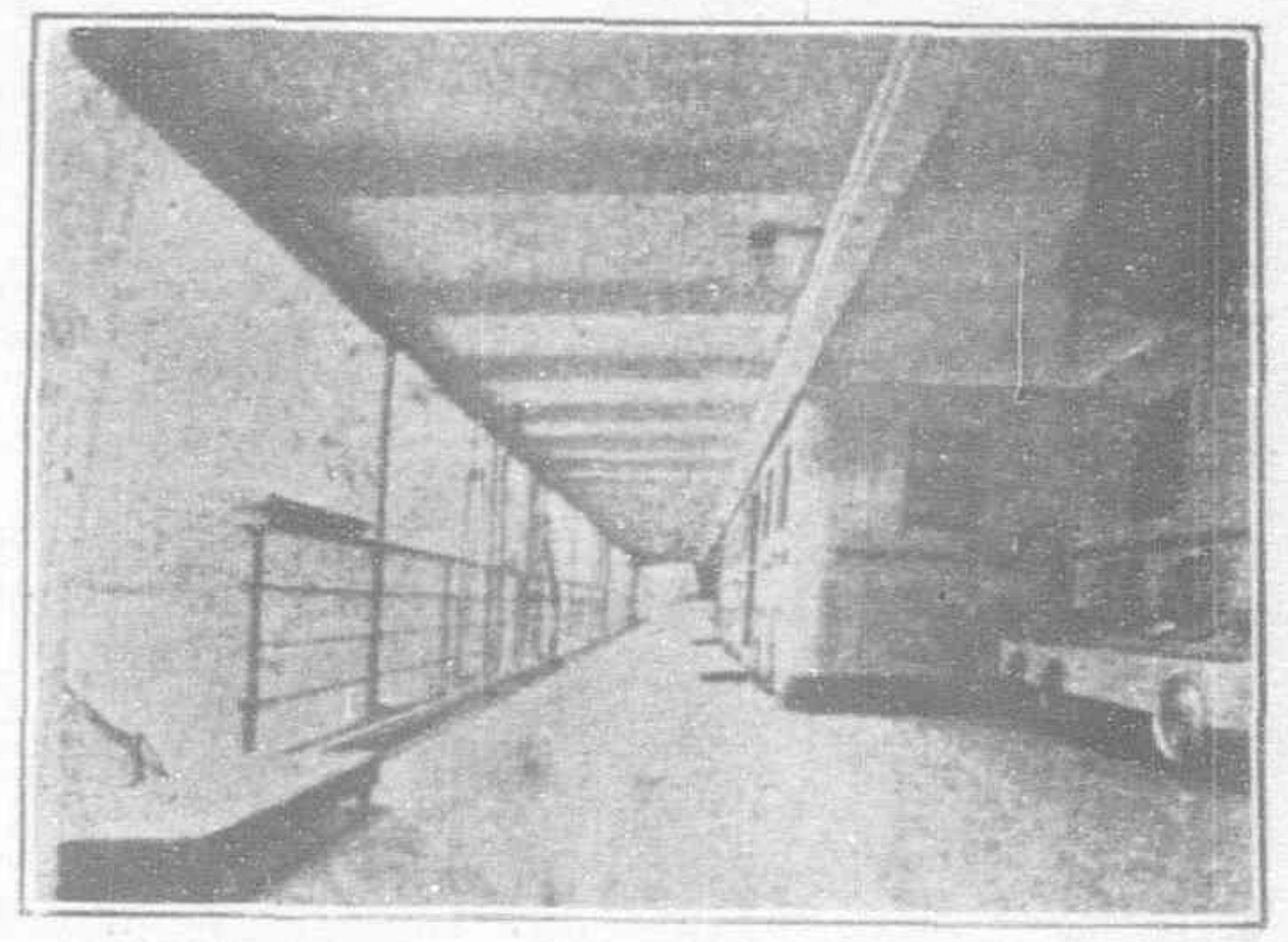

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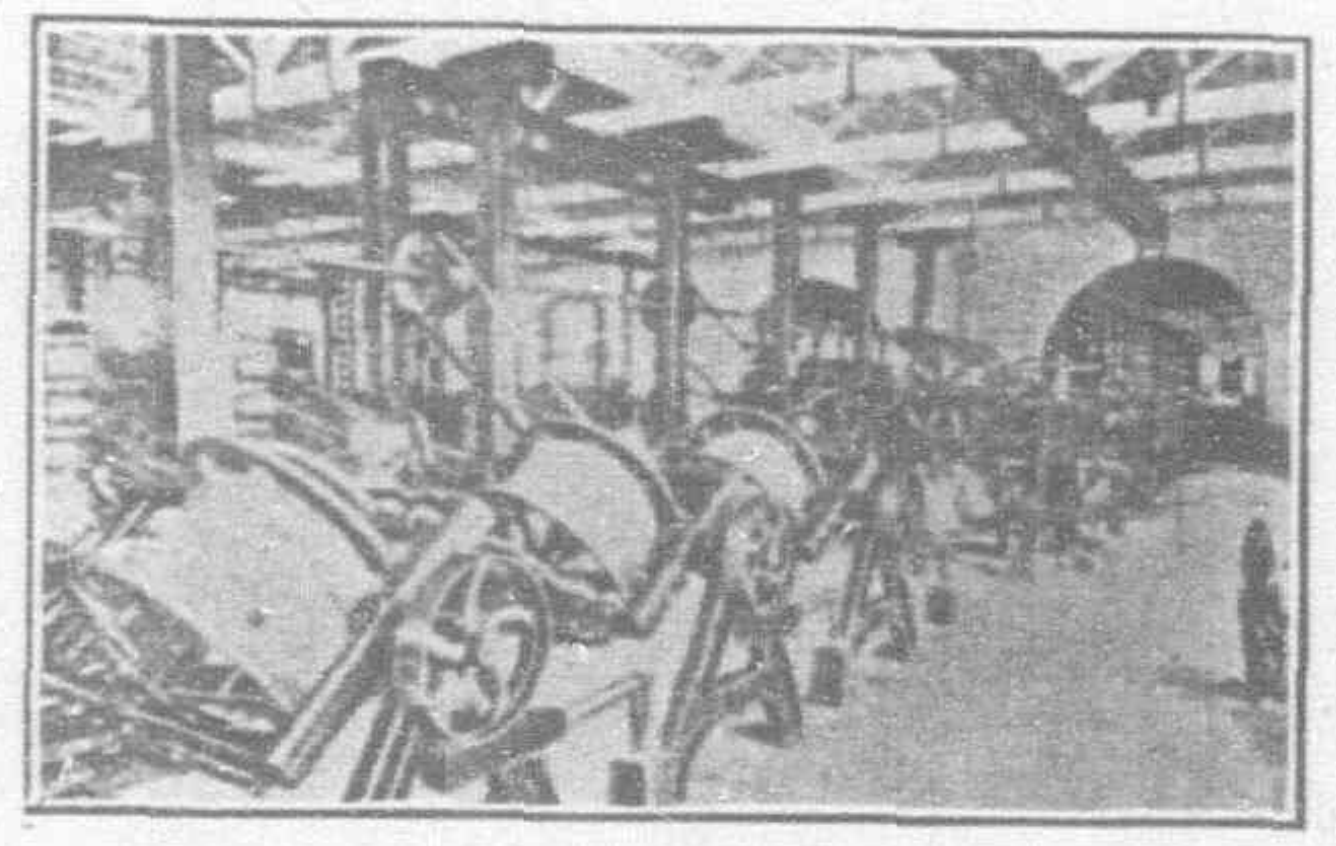

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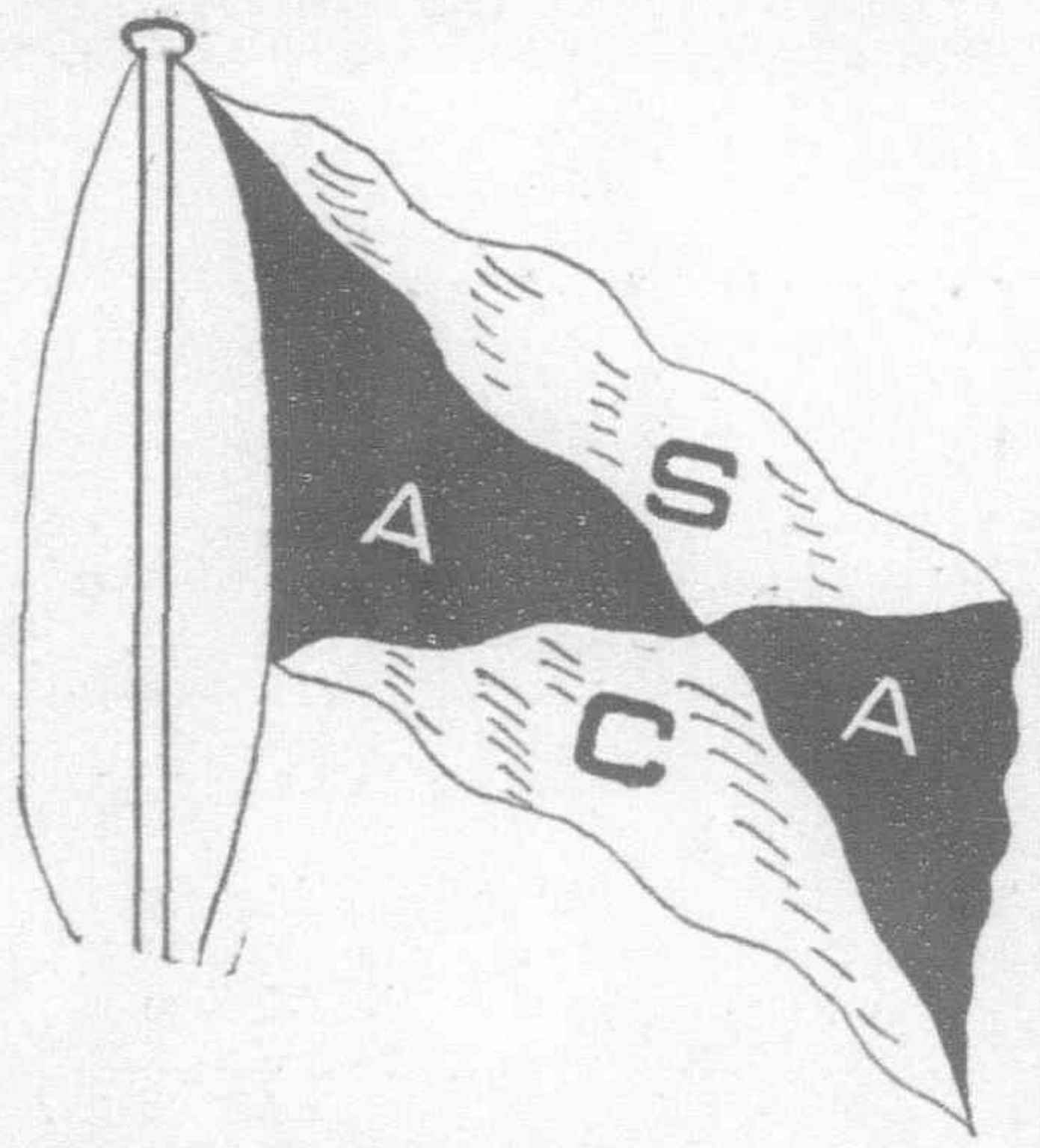

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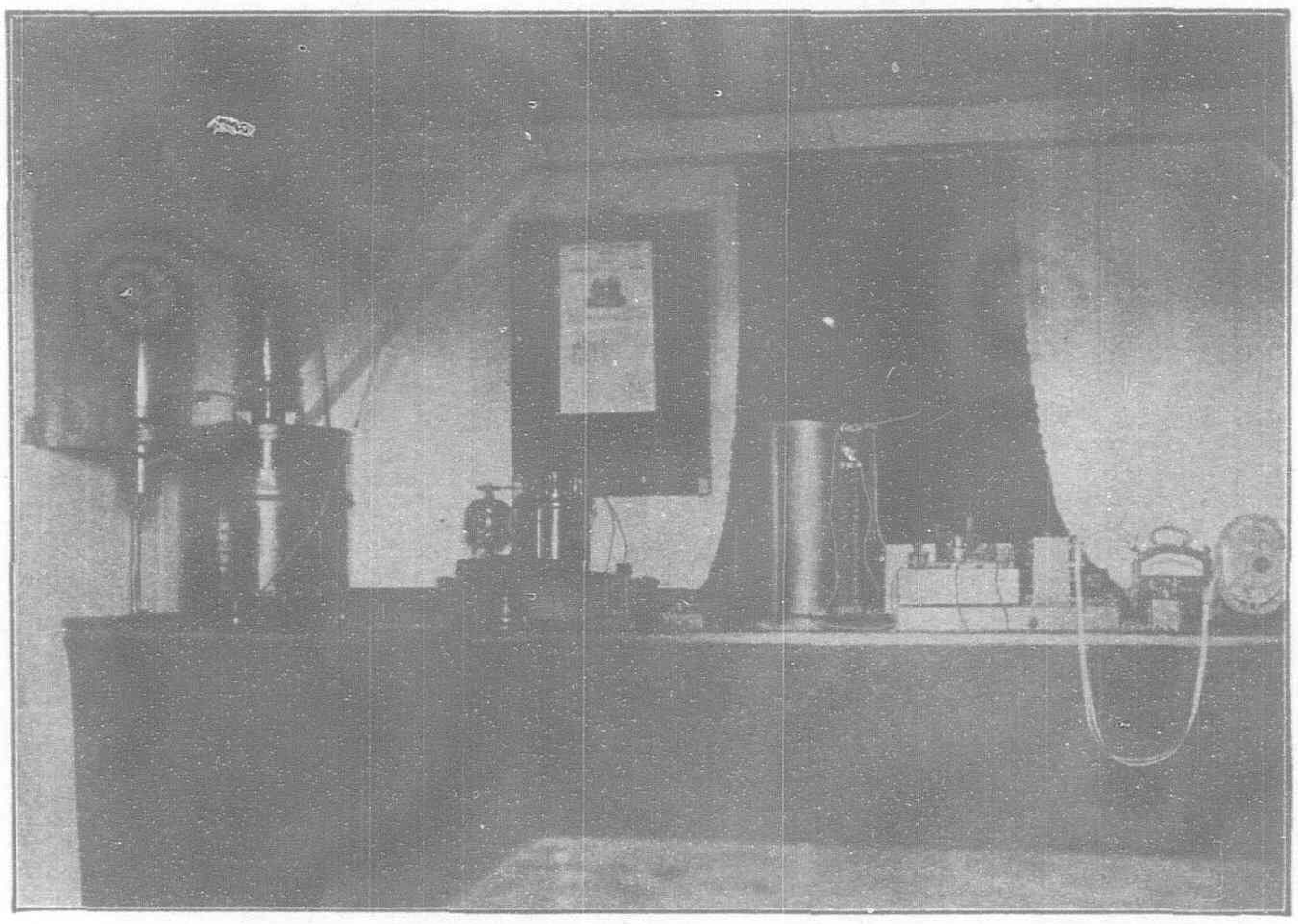

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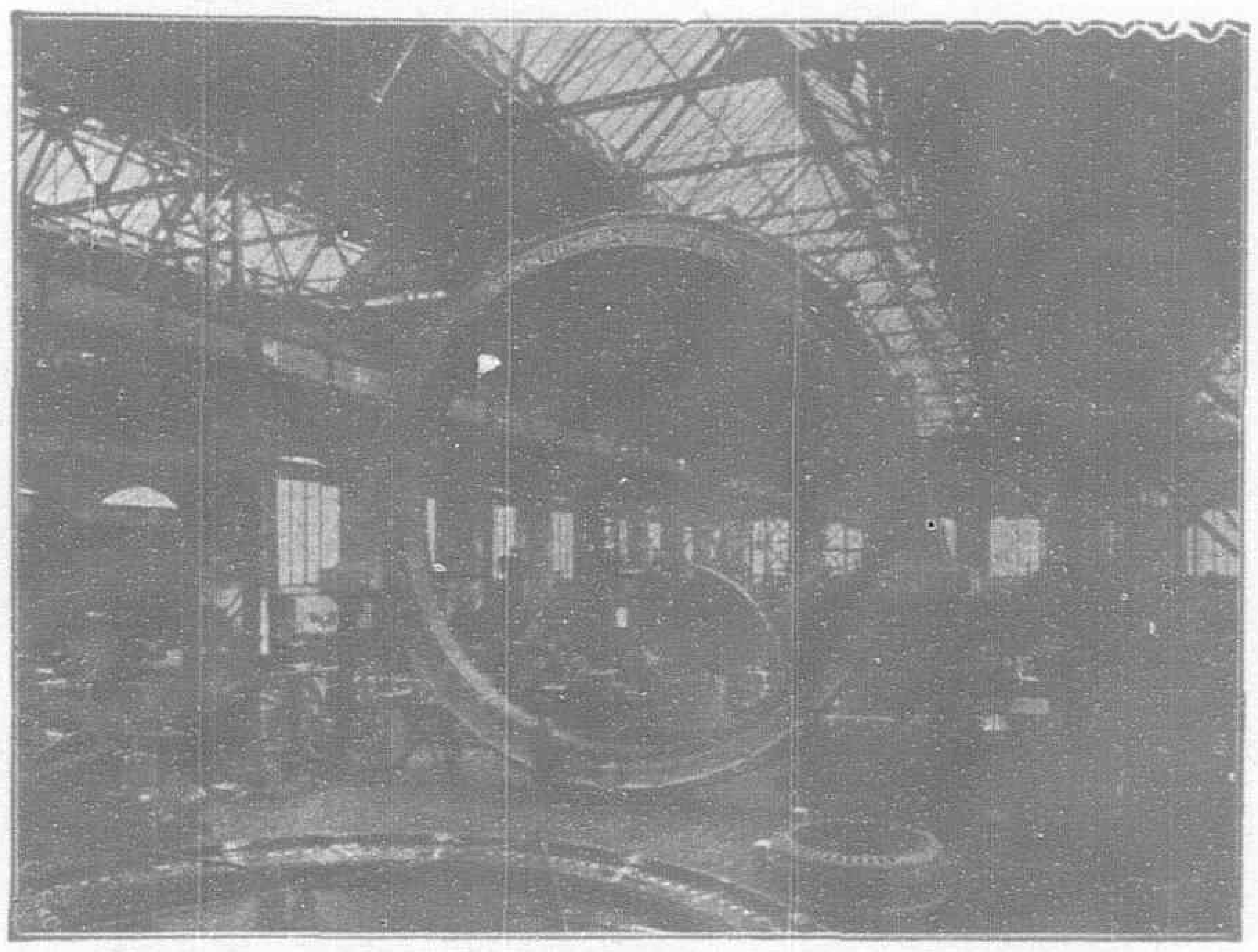

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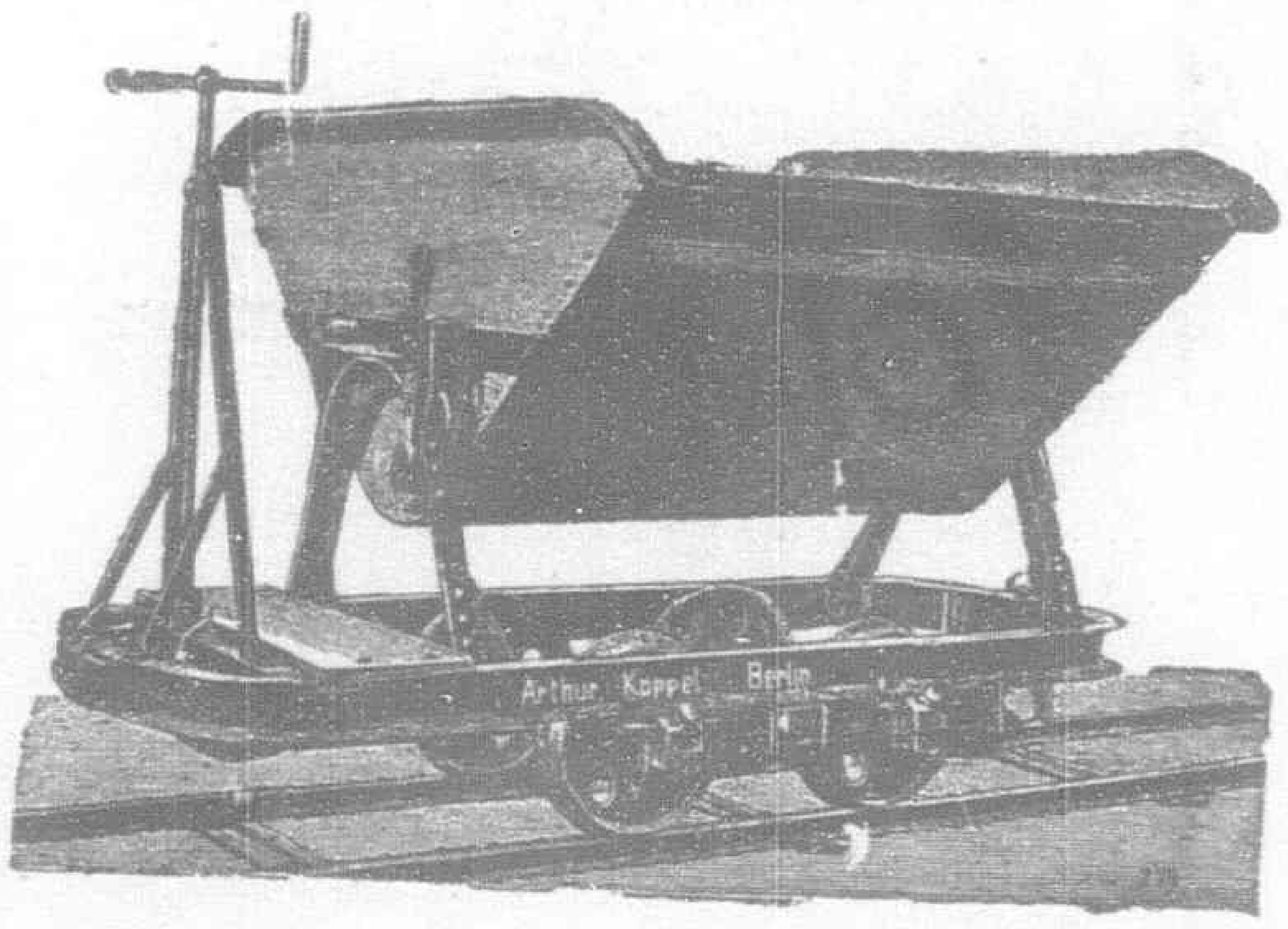

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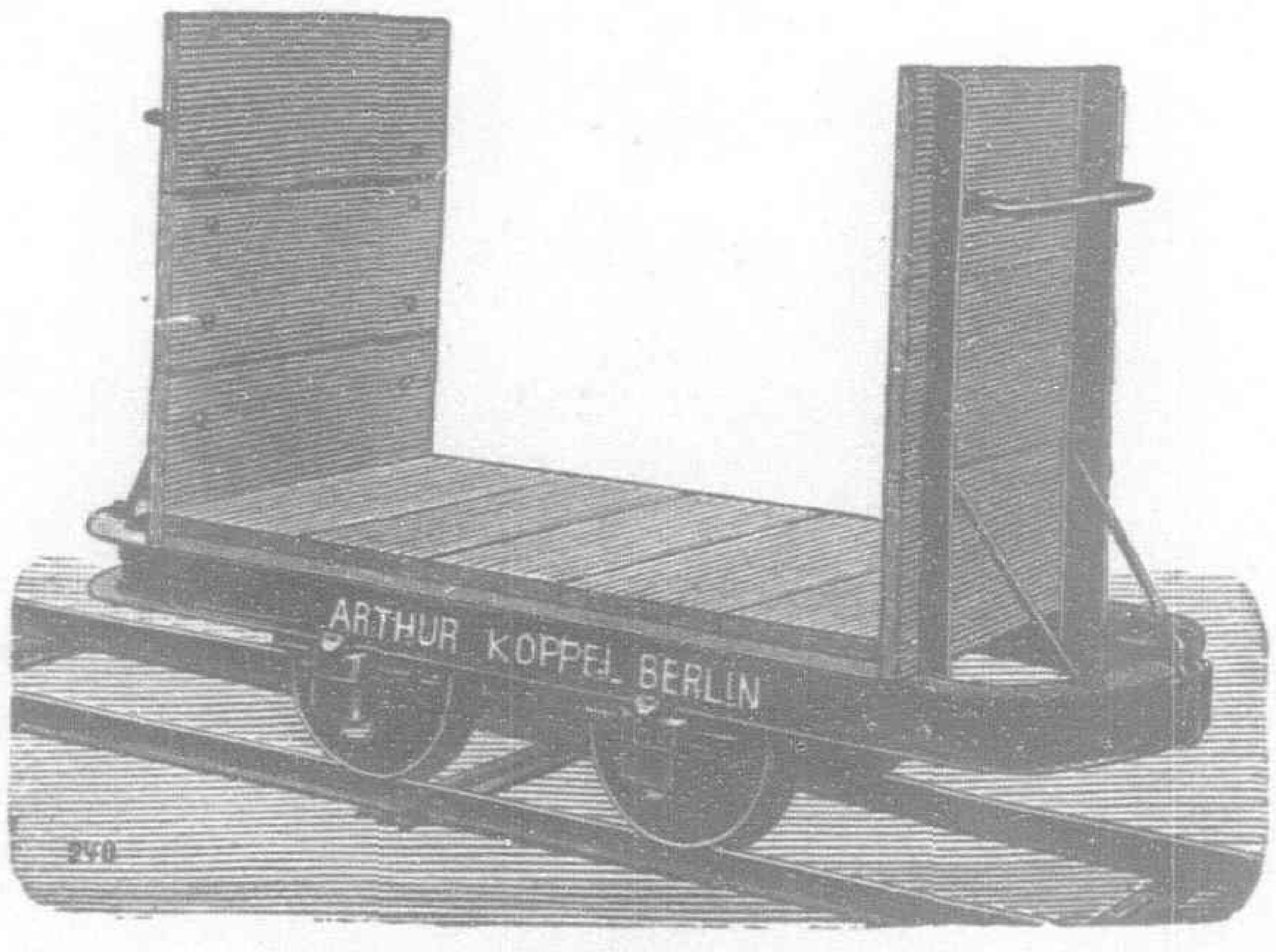

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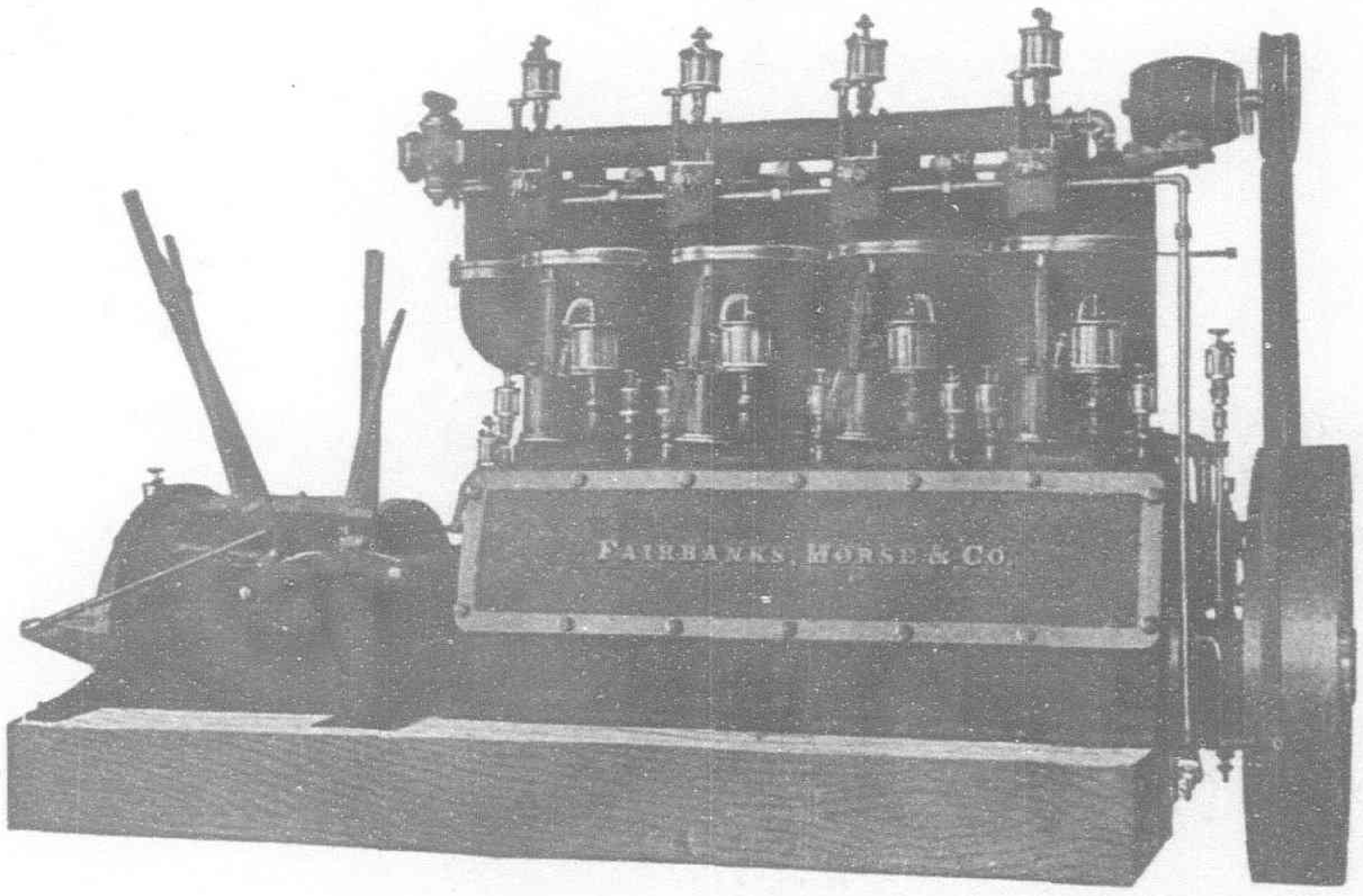

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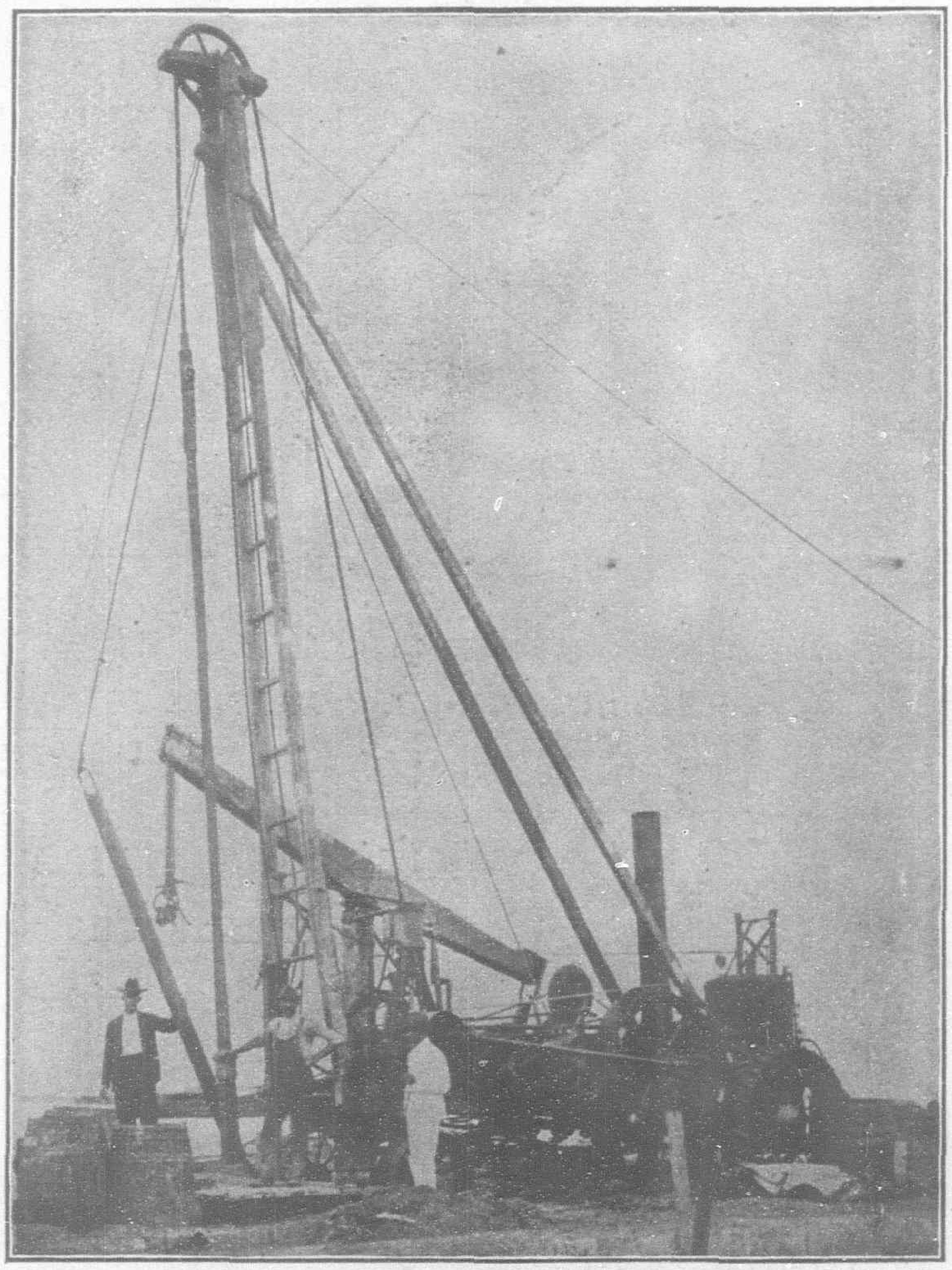

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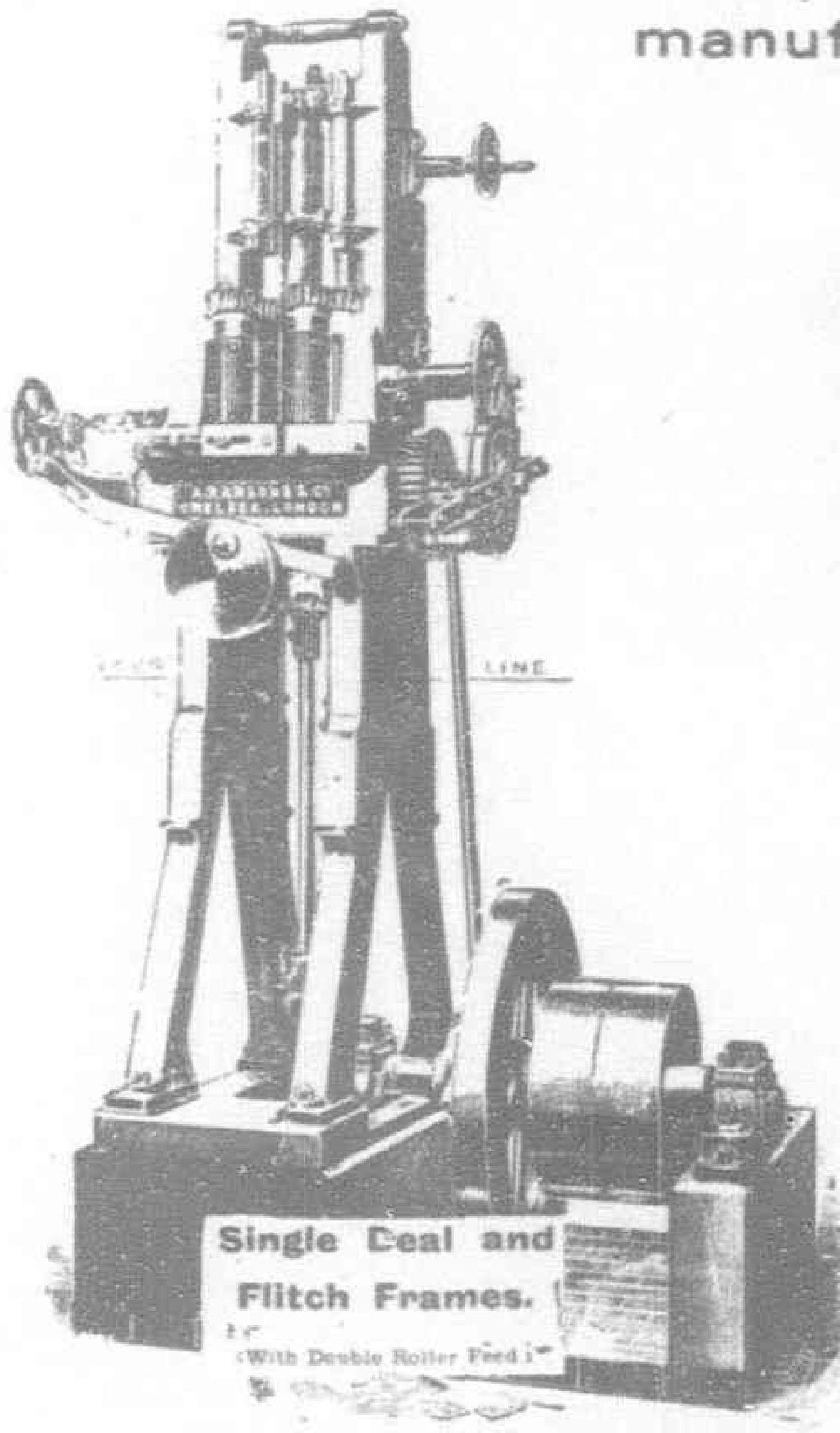

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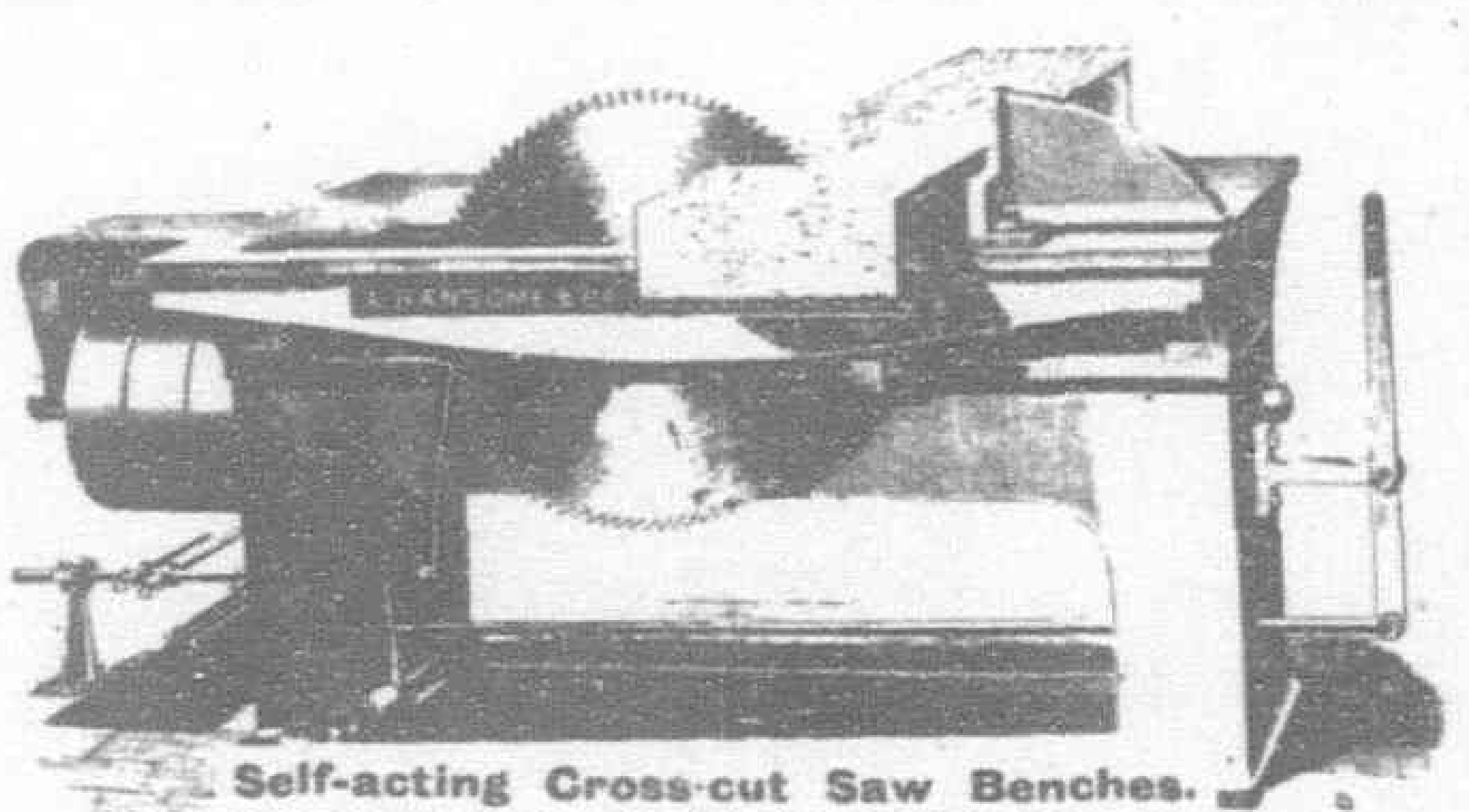

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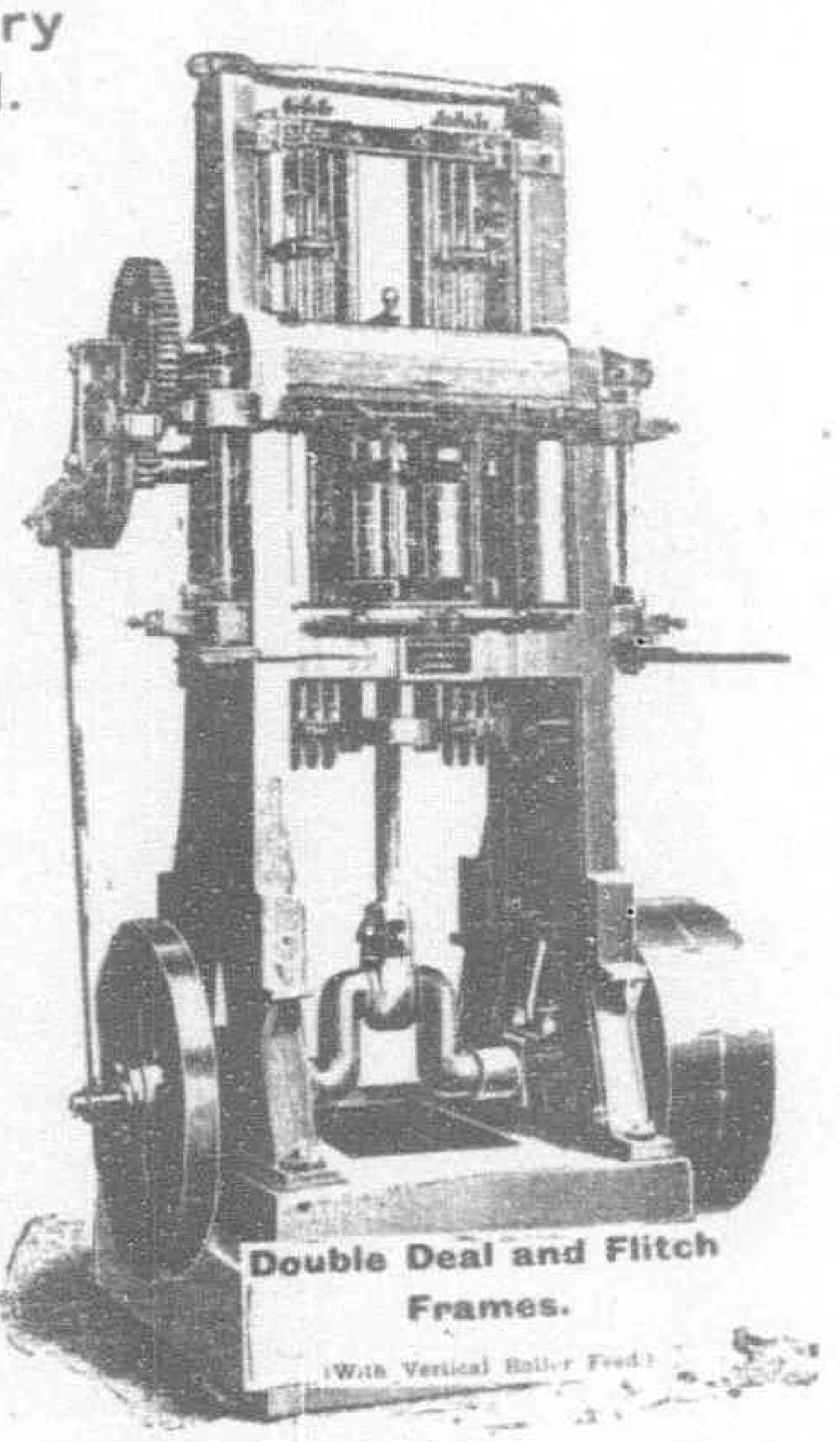

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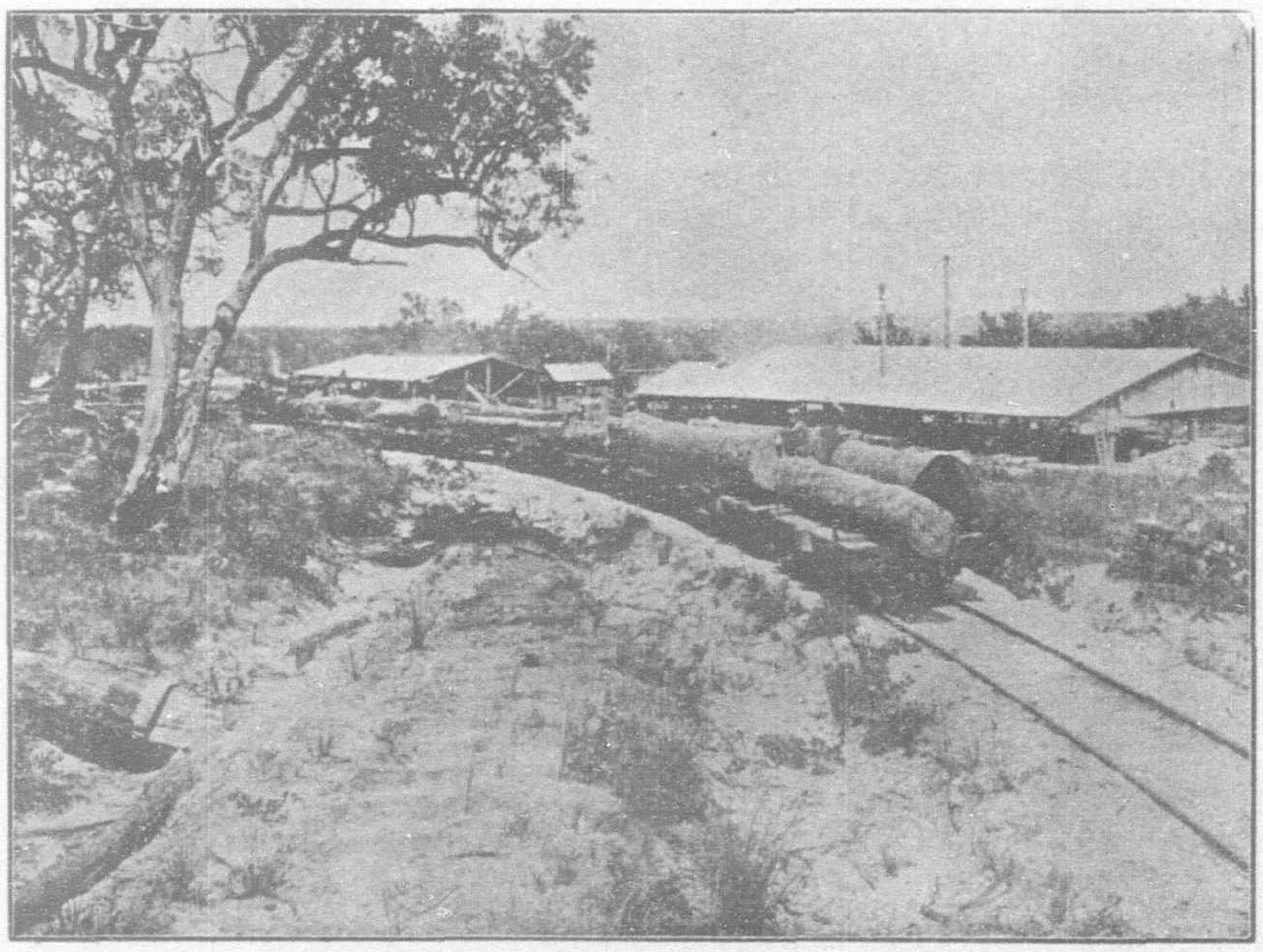

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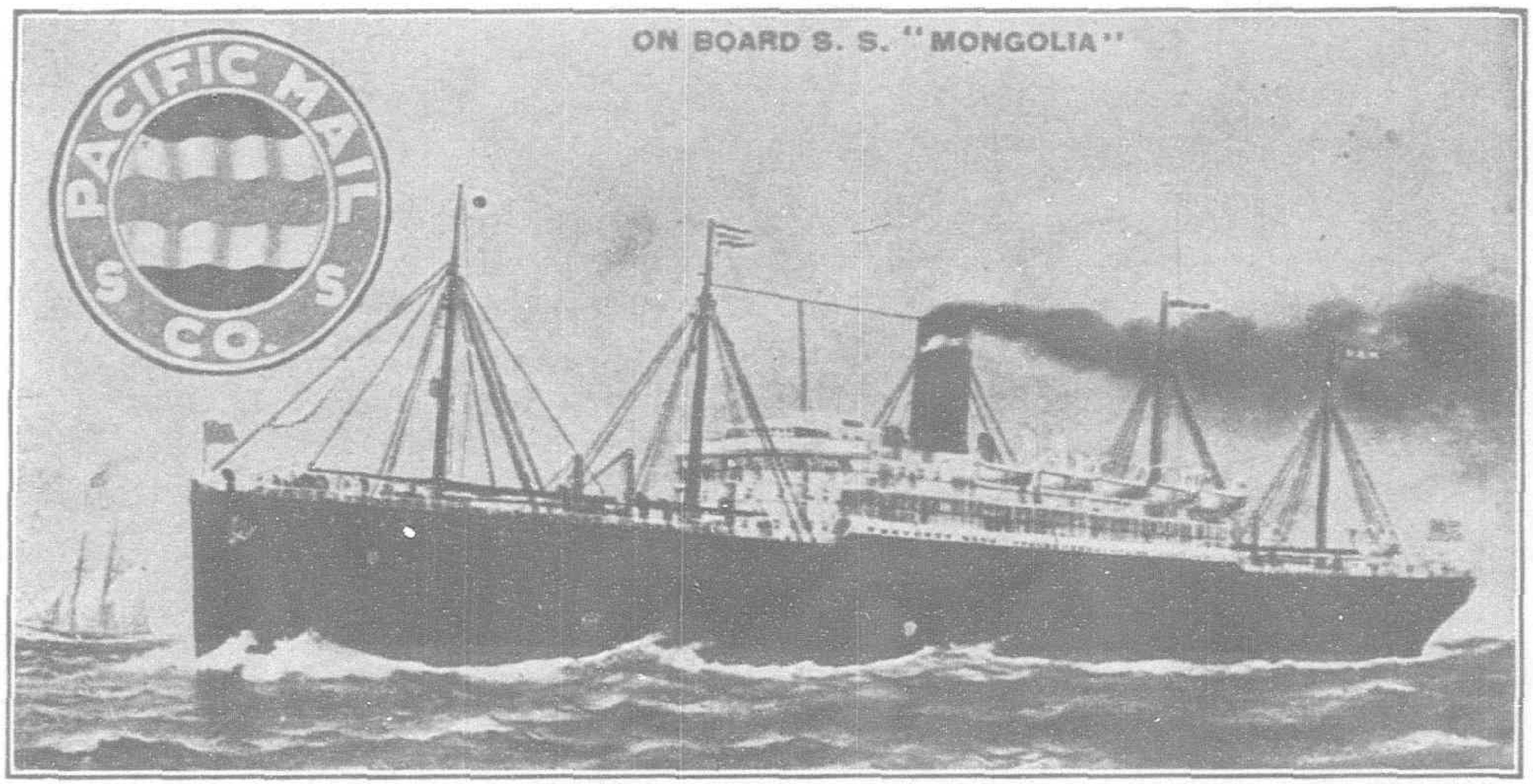
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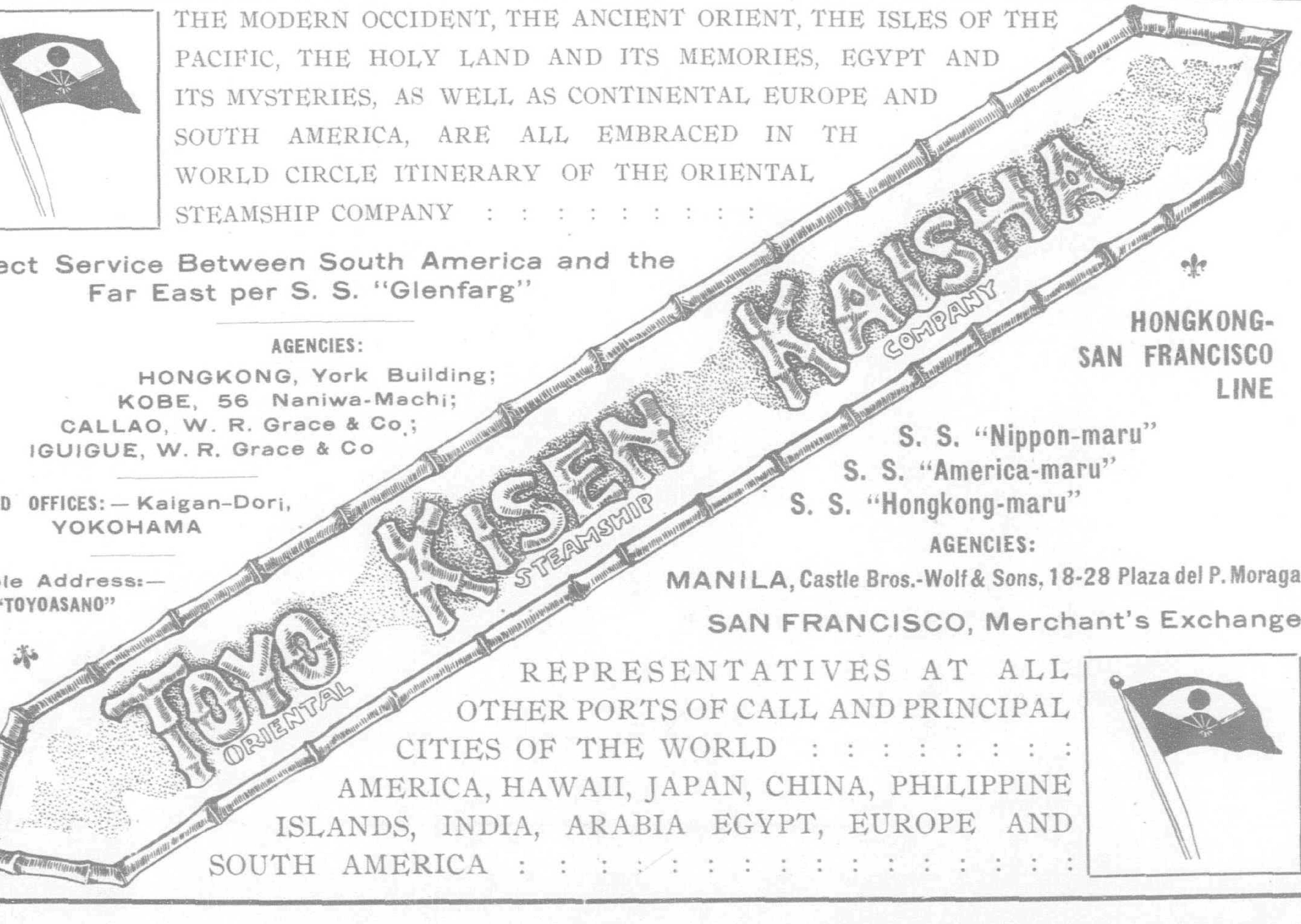

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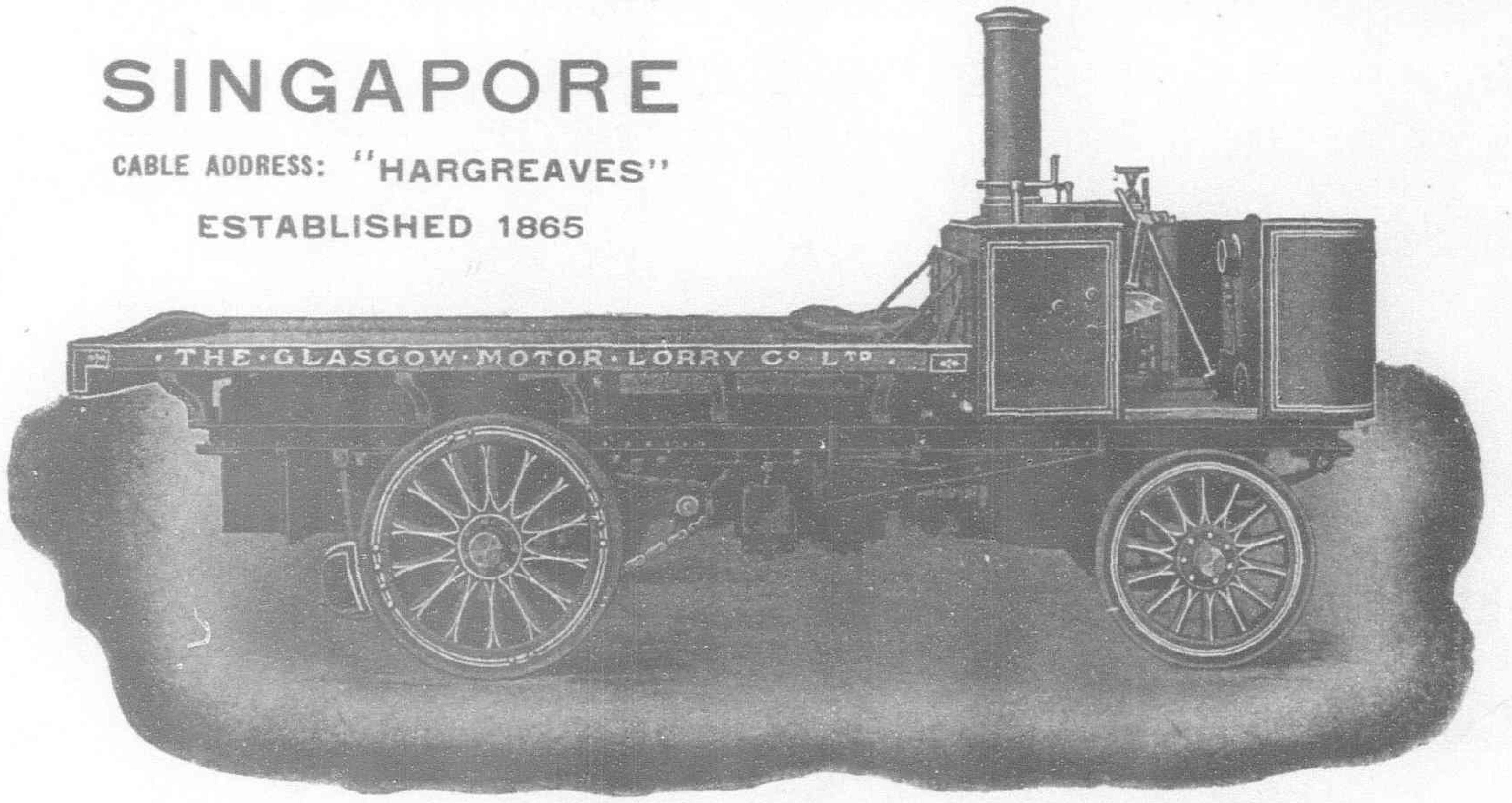

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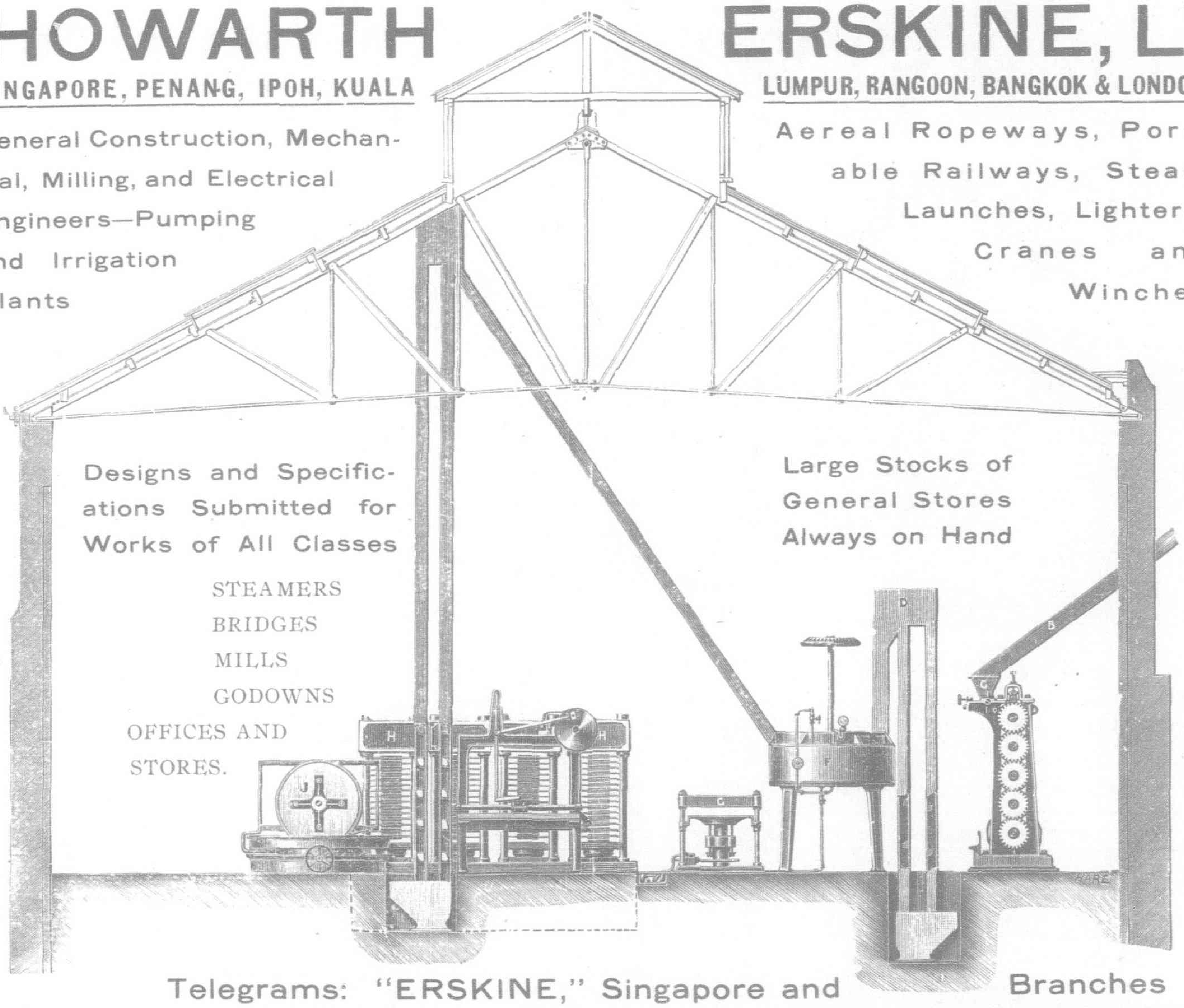

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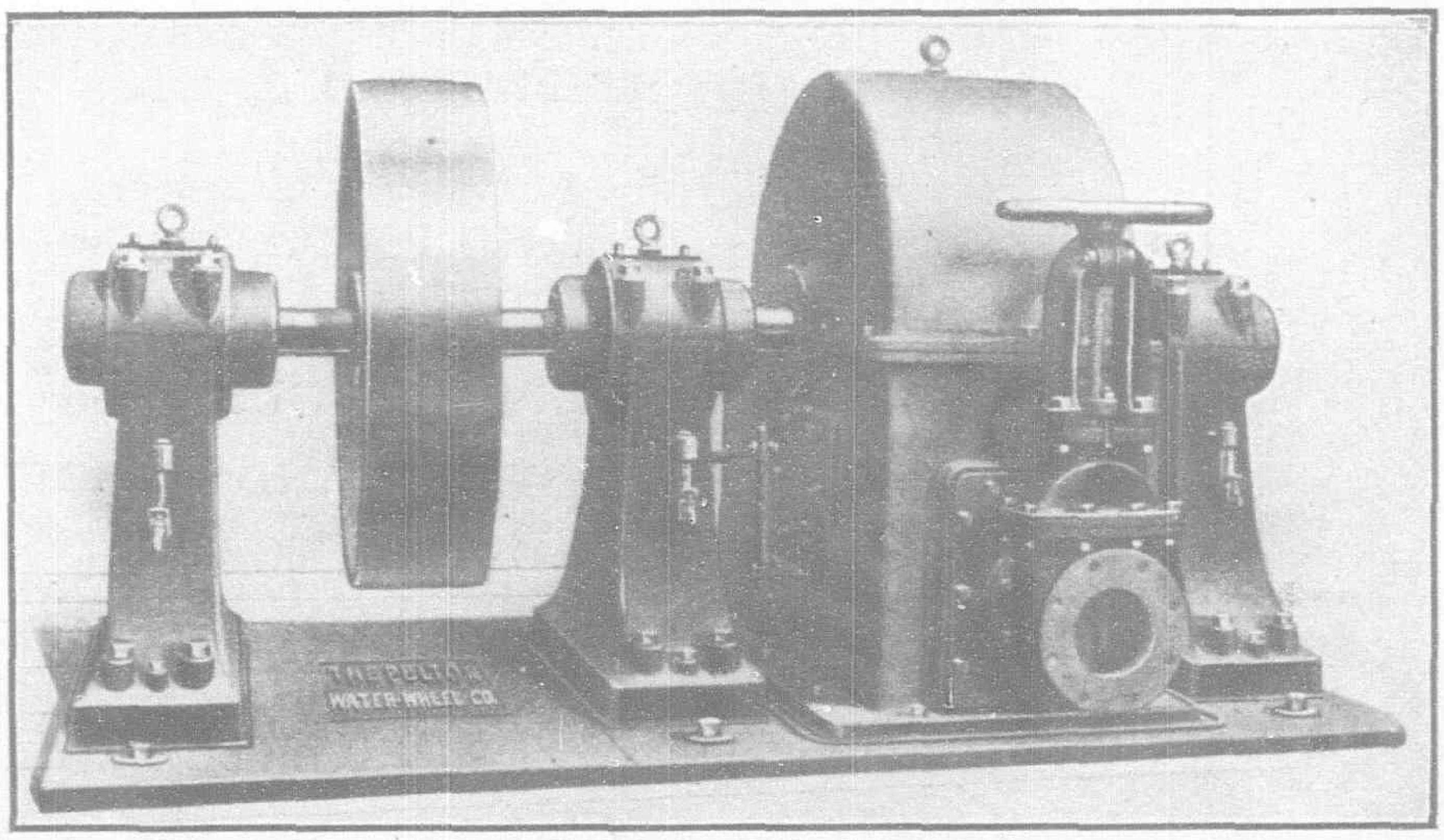

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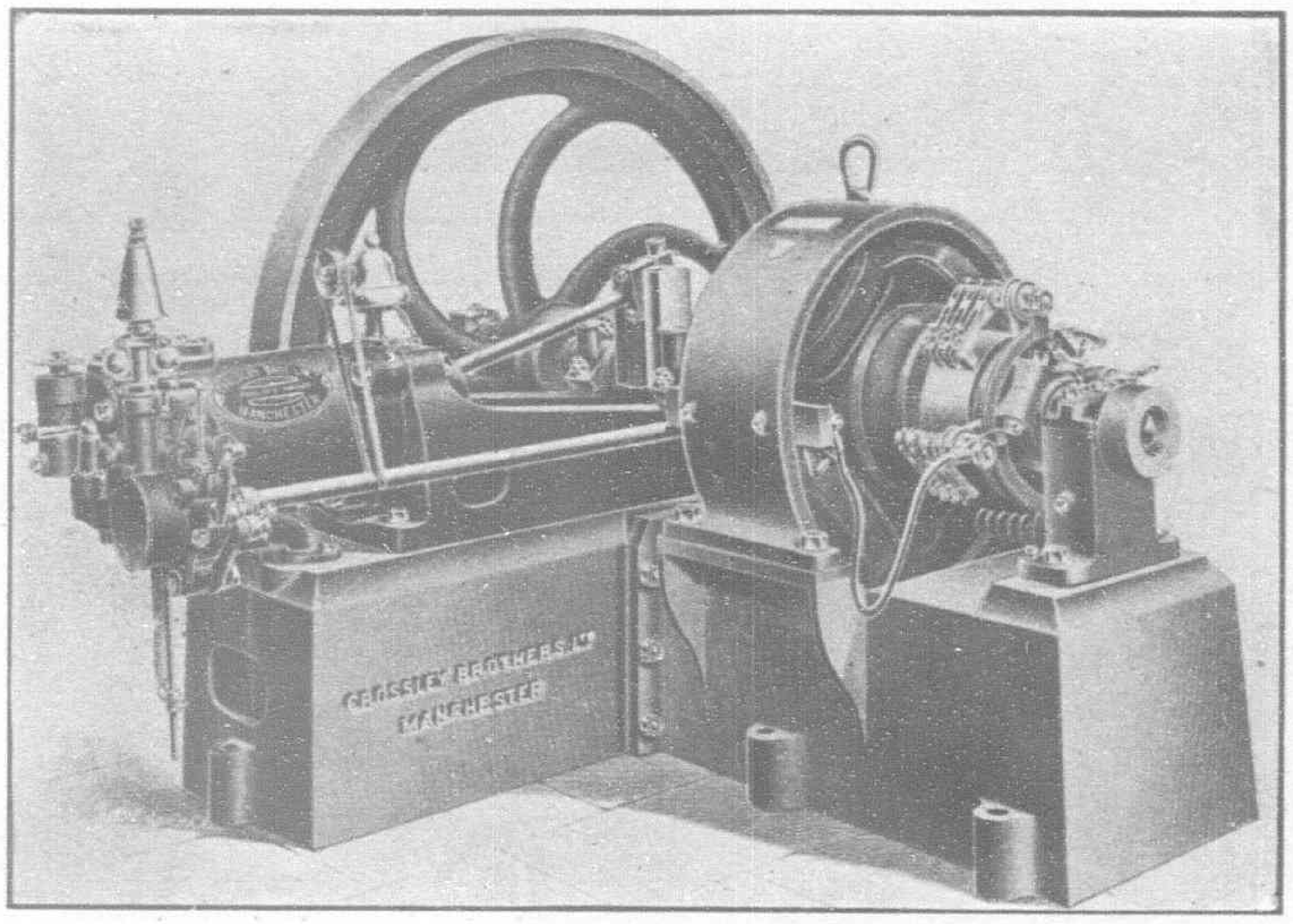

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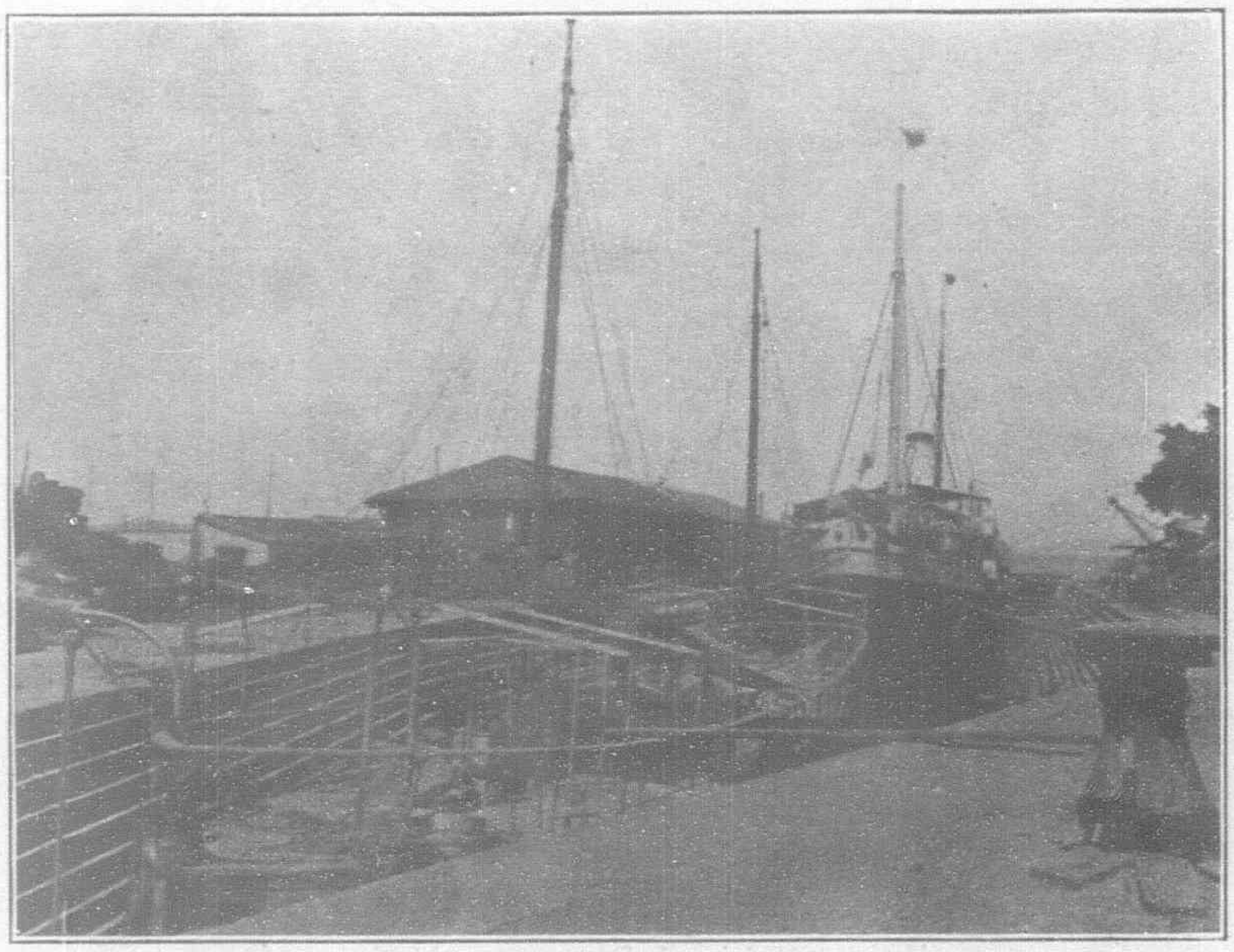

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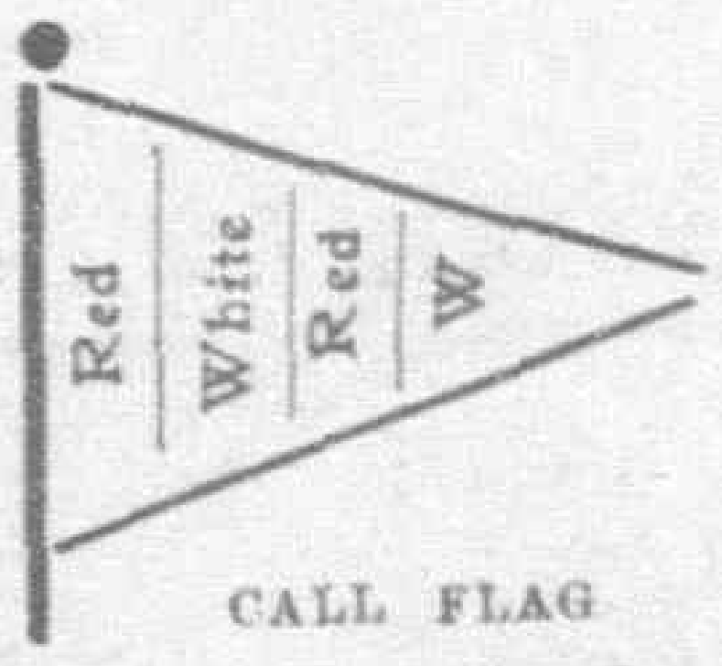

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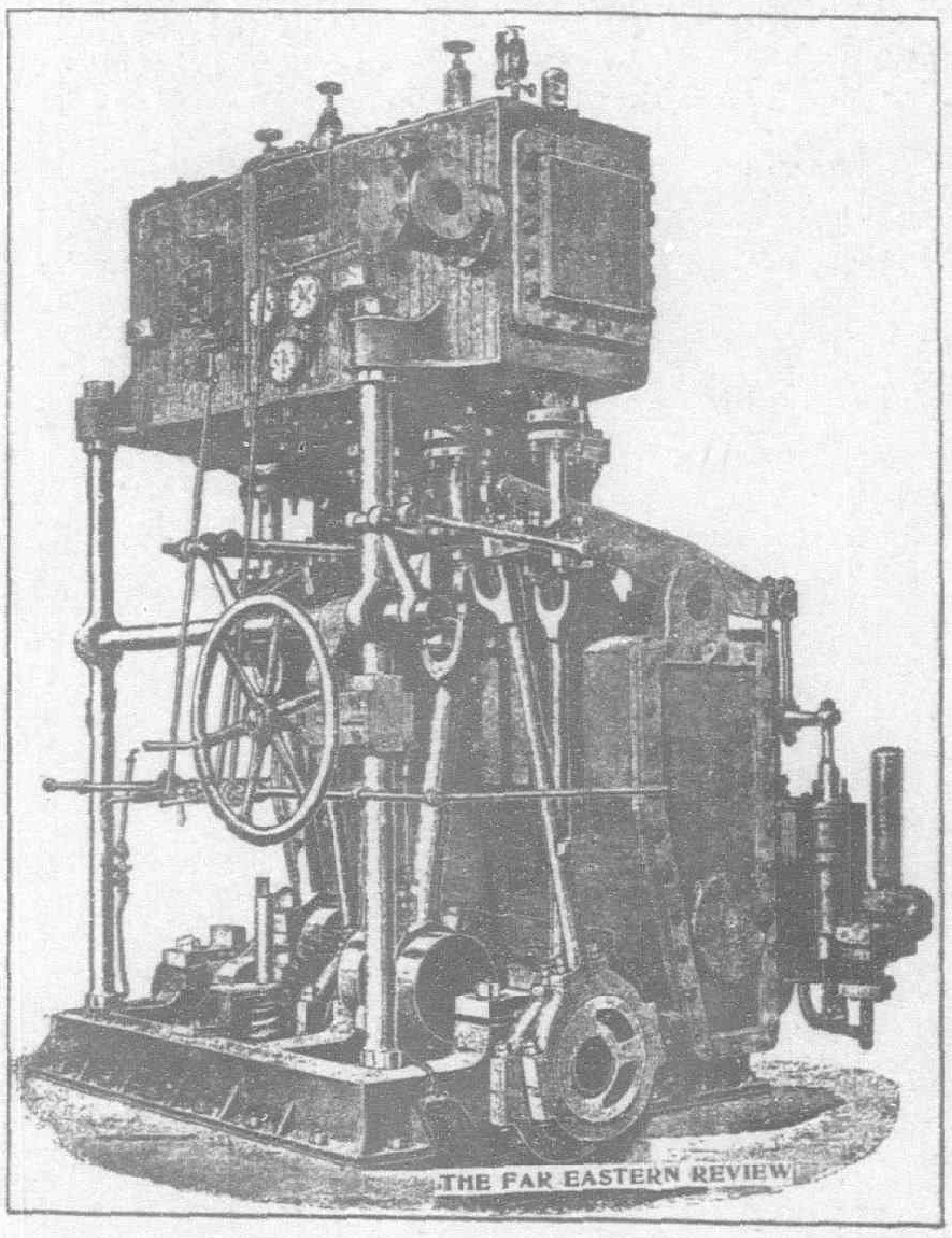

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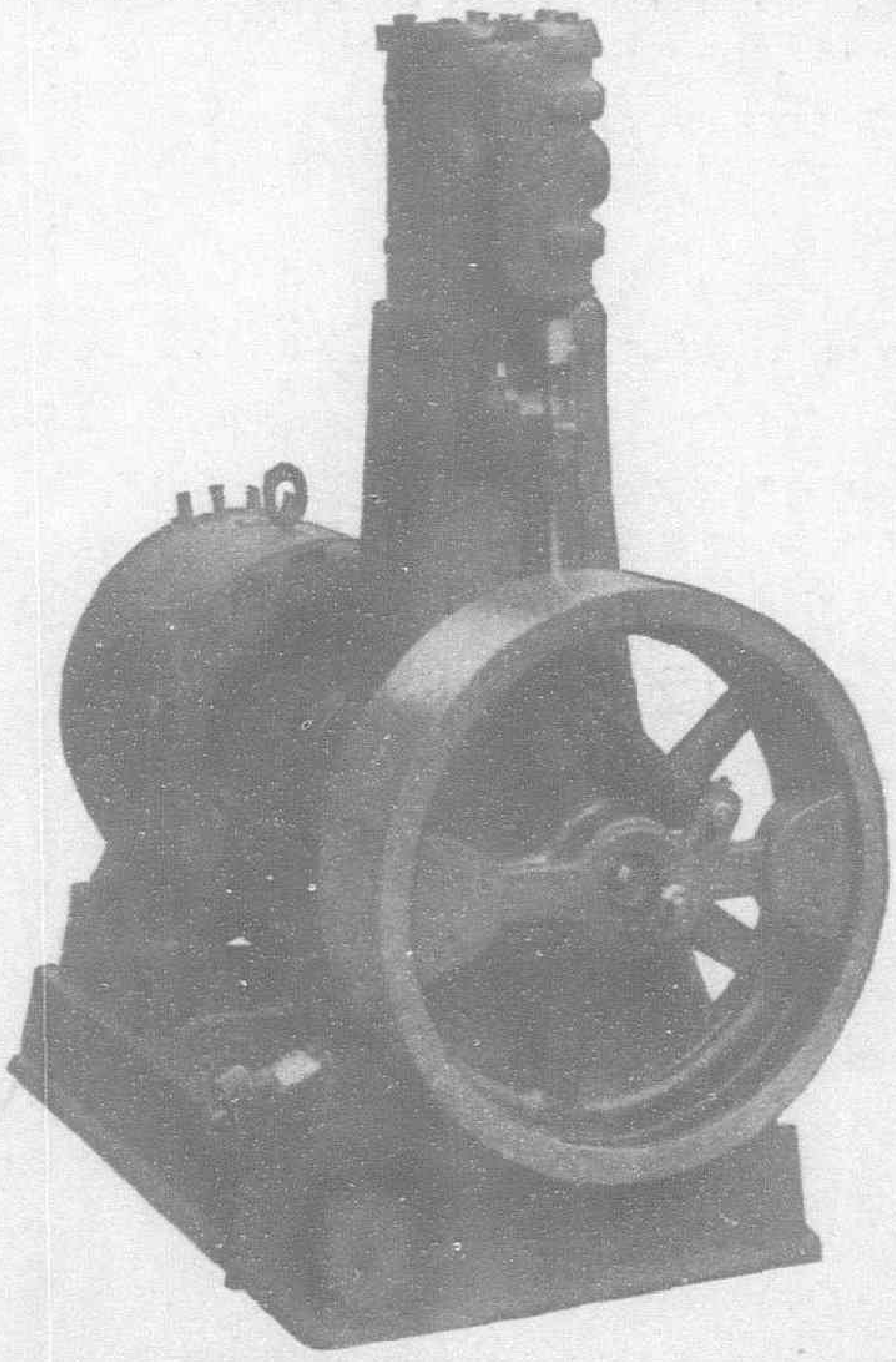

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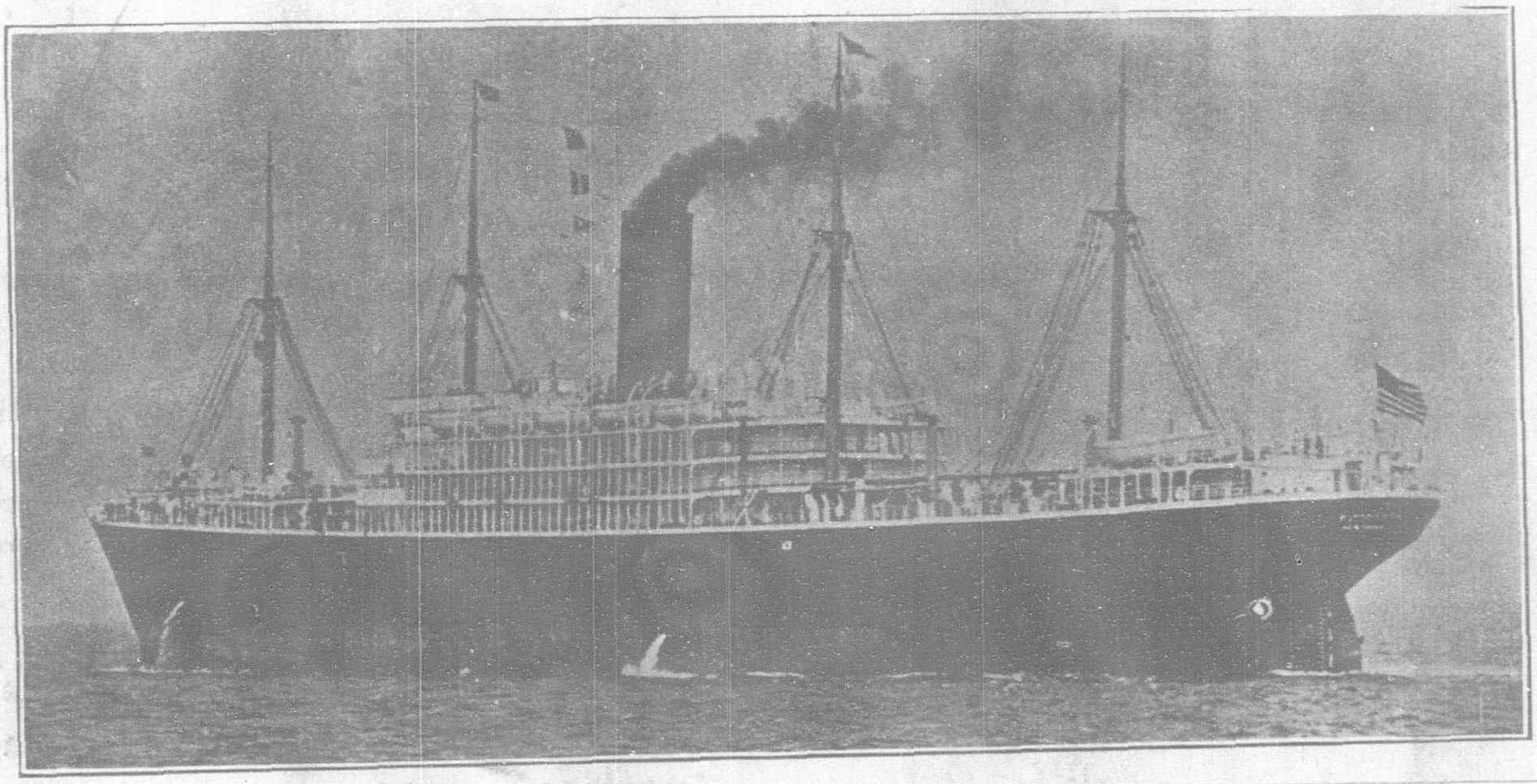

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SPECIAL RATES are allowed members of the United States Army and Navy; Missionaries, and to Employees of the Insular Government of the Philippines.

VOYAGE ACROSS THE PACIFIC of less than fifteen days is one continuous series of delightful pleasures. No expense has been spared to afford passengers every conceivable comfort during a voyage where various changes of temperature are met.

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FROM SEATTLE						STEAMER	VOYAGE	TO SEATTLE					
LEAVE	ARRIVE							LEAVE					ARRIVE
SEATTLE	YOKOHAMA	KOBE	NAGASAKI	SHANGHAI	HONGKONG			HONGKONG	SHANGHAI	NAGASAKI	KOBE	YOKOHAMA	SEATTLE
Apr. 29	May 15	May 21	May 27	May 30	Jun. 4	. MINNESOTA .	6	Jun. 12	Jun. 16	Jun. 19	Jun. 22	Jun. 25	Jul. 10
Jun. 7	Jun. 23	Jun. 29	Jul. 5	Jul 8	Jul. 13	. . DAKOTA . .	4	Jul. 21	Jul. 25	Jul. 28	Jul. 31	Aug. 3	Aug. 18
Jul. 25	Aug. 10	Aug. 16	Aug. 22	Aug. 25	Aug. 30	. MINNESOTA .	7	Sep. 7	Sept. 11	Sept. 14	Sept. 17	Sept 20	Oct. 5
Sept. 2	Sept. 18	Sept. 24	Sept. 30	Oct. 3	Oct. 8	. . DAKOTA . .	5	Oct. 16	Oct. 20	Oct. 23	Oct. 26	Oct. 29	Nov. 13
Oct. 20	Nov. 5	Nov. 11	Nov. 17	Nov. 20	Nov. 25	. MINNESOTA .	8	Lec. 3	Dec. 7	Dec 10	Dec. 13	Dec. 16	Dec. 31
Nov. 28	Dec. 14	Dec. 20	Dec. 26	Dec. 29	Jan. 3	. . DAKOTA . .	6	Jan. 11-07	Jan. 15	Jan. 18	Jan. 21	Jan 24	Feb. 8

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